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***Mechwarrior 4 Mercenaries Strategy Guide***  
*(Unofficial manual for HLA Battle/Team Battle)*

*RandymGames*



By Jason "Coolant" Head

**MW4: Mercs Strategy Guide**

by RandymGames

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RandymGames – Come Test Imagination’s Border

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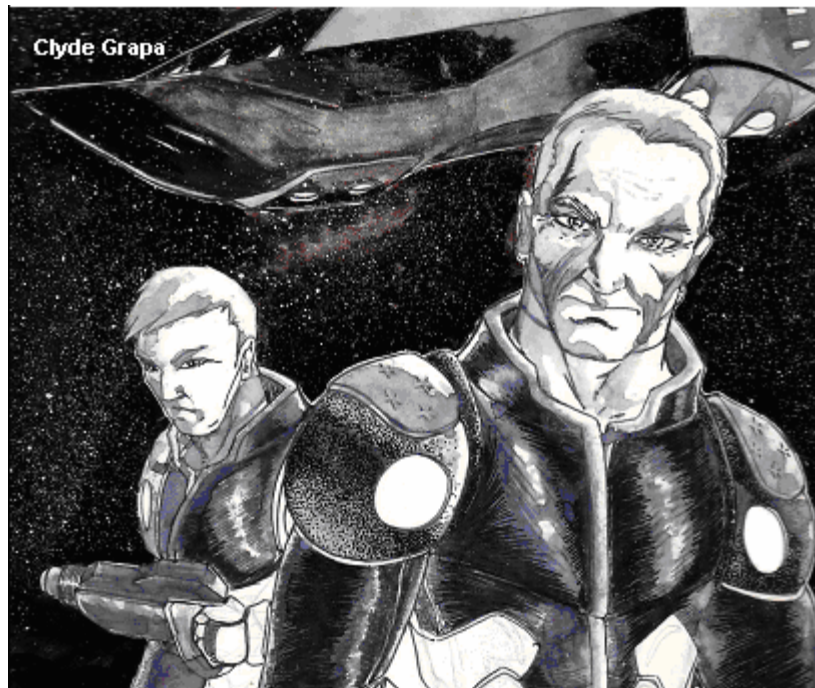
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*- Special Thanks -*

To Jerry “Bumblebee” Zampa, to the MW4 team, to the brilliant mod team, and to my wife and daughter who put up with me lounging in my favorite chair, playing my favorite game, and occasionally letting slip those sailor words.

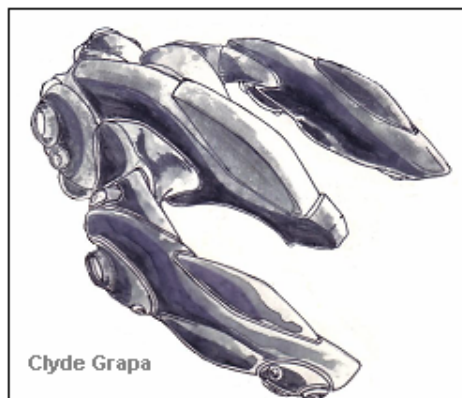




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# MW4 MERCS STRATEGY GUIDE

## INTRODUCTION

“The quickest way of ending a war is to lose it.”  
- George Orwell

Up front, many will fiercely disagree with the contents herein. Mercs has been out for many years and there are many strategies that players will bet their life on – time-tested, war-tested tactics. Will I refute them? Heck, yes. Why should you believe me and just who do I think I am? I could claim to have many years of experience playing Mercs. So what? There are many who have played Mechwarrior longer. There are many who have belonged to a unit longer or been with more units than I. There are many that have fought more battles in league-play, have greater notoriety, post more on forums, talk trash better and so forth. So, based on the facts above, I should uninstall Mercs, and go back to playing Gorf. Not on your life. I consistently, with many screenshots to prove it, score at the top of the leader board usually with a positive kill/death ratio. In this Strategy Guide I will be specific on how to become a point-machine even down to why I choose certain mechs and weapons. Why, you might ask, would I be willing to part with these top-secret (far from it) tips and share them with other pilots? Well, it is related to the above fact that the game is as old as dirt. And Pilots as old as mud – not in actual birth years, but in the cockpit. They are set in their ways. Nothing new under the sun, and so forth. I would bet against a Las Vegas dealer with a rigged deck that 99% of experienced pilots won't change. They think they know everything. This Strategy Guide is for that other 1%.

## Mission Objective

After reading this manual and putting the tips into loads of practice I expect you to be not near the top of the scoreboard but at The top. You'll have to battle me for it, though. That's where we are headed, that's the goal. Anything else is second best. This Strategy Guide will not go into how to exploit. I don't use 'em, I deplore them, and ya won't need 'em.

## BATTLE/TEAM BATTLE FORMAT

“There never was a good war or a bad peace.”  
- Benjamin Franklin

This is a particular game type that awards points for damage and additional bonus points for destroying weapons and the mech itself (Kill Bonus). To quote the game type from

within a server, “...points are awarded by damage dealt and scaled based on your chassis.” Battle (you vs. everyone else) and Team Battle (your team vs. their team) allows smaller mechs to score as many points as larger mechs despite having less firepower through the Damage Ratio (also known as Damage Multiplier). Generally speaking, the less tonnage a mech has the greater the Damage Ratio. I profess to know nothing about other game types like Team Destruction, Capture the Flag, King of the Hill, Attrition, or Mission Play. Nor do I claim any expertise in servers with settings like NHUA (No-heat, Unlimited Ammo) or No Re-spawn. This Strategy Guide is all about the Battle/Team Battle game type from an Open Server standpoint.

### **Team Battle Strategy Formula**

I won't go into specific team Strategies. Let me be brief. I know the rest of this paragraph will cause teeth or dentures to grate. Winning at Team Battle comes down to a very simple formula: everyone on the team scores more points than they give away. That's it. I don't endorse spawn-camping (staying in your spawn and waiting for the other team), spawn-raping (hitting opponents just re-spawning before they can even get a shot off – although I will explain how to 1v1 and score a load of points in an enemy spawn, more on that later), narc-boats, arties, moving in formation, mixing brawlers with snipers, taking the high ground and other team-oriented tactics. If every single member of a team scores just 1 more point than they give away the team wins. This gives everyone on the team the freedom to venture off on their own, do what they want, engage who they want at the time of their choosing – just score more points than you give. You can even go solo and rush a spawn or a nest of enemy mechs and still out tally your opponent. Plus, you can focus on your own score. That's the beauty. By using the tips found in this Strategy guide you can achieve an amazing score and still help your team. Go ahead and make your plans to tar and feather, I'll still see ya on the battlefield.

### **Philosophy of the Battle/Team Battle Format**

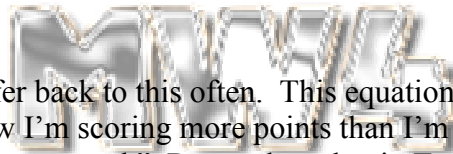
First and foremost: it's not about taking the biggest mech. In a Battle/Team Battle game you will see all weight classes represented, unlike in the Destruction format. Although you still have to build a good config, pilot it proficiently, and be smart about your decisions on a map, with Battle/Team Battle, you don't have to be too concerned about being under-gunned when taking a lighter mech. From the get-go, you have the possibility of scoring just as many points as the big boys. In fact, some pilots already realize that there is greater potential in mechs with less tonnage. There are a couple of reasons:

- 1) Free Tonnage – The amount of available tonnage after stripping everything off a mech to leave its bare essentials. Often times a smaller mech will actually have a greater percentage of its total tonnage as Free Tonnage than a larger mech. For instance, a Tenchi (65 tons) has 50.6 Free Tons. A Highlander (90 tons) has 67.6 Free tons. Although the Highlander is 25 tons heavier, the amount of Free tons is only 17; a loss of 8 tons. An Annihilator (100 tons) has 76.1 Free Tons. That is



- 35 total tons heavier than the Tenchi and yet only 25.5 Free tons; a loss of 9.5 tons.
- 2) Not enough weapon slots – A mech that has twice the tonnage may not have twice the slots available. For instance, a Hunchback (50 tons) carries 2 cultr10's and 2 Heavy Medium Lasers. The Annihilator (100 tons) at twice the tonnage can carry 4 cultr10's but there isn't enough beam slots to accommodate 4 Heavy Medium Lasers. Interestingly enough, the Damage Ratio for a Hunchback (1.91) over the Annihilator (.95) is 2x.
  - 3) Heat Management is different with twice the weapons – Even if a mech has available slots for twice the weapons, it doesn't mean the Heat Efficiency for those weapons will be manageable. For instance, a Fenris with 7 Medium Lasers and 1 Cstrk4 with 10 heat sinks has a Heat Efficiency of 97. A Sunder with equivalent armor and 14 Medium Lasers and 2 Cstrk4's (twice the weapons) with 20 heat sinks (twice as many) has a Heat Efficiency of 73 – a decrease of 24.
  - 4) Speed – Even if a mech can carry twice the weapons as a mech half its tonnage and heat is manageable, heavier mechs are much slower and require many more tons to upgrade an engine. I'll use my variants of the Hunchback/Annihilator for comparison. The Hunchback goes 80 versus only 49 for the Anni. Speed gets you to the action quicker so you can start racking up points. 49 is painfully slow.

### Coolant Equation



You will see that I will refer back to this often. This equation helps to answer the question, “How can I know I'm scoring more points than I'm giving to the other team? The scoreboard only shows my total.” Remember, that in Team Battle there are only 3 ways to score points: damage, destroying enemy weapons, and kill bonus. Let's take a look at the first two. From the Damage Ratio (Multiplier), we already know that it helps to even out the scoring for all tonnages. A Battle Armor at 20 tons has the potential to score as many points as a 100-toner. If an alpha-strike (firing all weapons at once) from a 100-toner with a Damage Ratio of 1 causes 100 points of damage the scoring will be 100 points ( $100 \times 1 = 100$ ). If a Battle Armor with a Damage Ratio of 5 causes 20 points of damage the scoring will also be 100 points ( $20 \times 5 = 100$ ). Neat how that works. So we can't go by the first and second ways to score points - they are a wash thanks to the Damage Ratio. That brings us to the final way to score points - Kill Bonus. Using the above example, a Battle Armor will most assuredly die more often than the fat assault. So, a Battle Armor could potentially score a whole lot of points – but, also have a very poor kill/death ratio that could give the other team a lot of points. Kills/Deaths are the key factors in the Equation. The Kill Bonus, like points, is also scaled according to Chassis and ranges from about 235 to 500 for mechs and greater for Battle Armors. If we take a standard Kill Bonus, say 300, and apply it across the board to all mechs in a game we have a basis to determine net score and how well you helped your team. We'll use 300 because more kills will be made by heavier mechs which falls in the lower range. Around the 65 ton range is where we start seeing a 300 Kill Bonus. We simply subtract the 300 for each death from our gross score and that gives us our net score. Here's an example:

A long-range assault pilot goes 10 and 2 (10 kills and 2 deaths) and scores 5000 points. A medium mech on the same map goes 5 and 10 (5 kills and 10 deaths) but scores 7500 points. At first glance the pilot that went 10 and 2 with a kill/death ratio of 5 to 1 would appear to help his/her team more. The medium pilot only had a kill/death ratio of 1 to 2. Let's plug it into the Coolant Equation.

$$\text{Assault} / 5000 - (2 \times 300) = 5000 - 600 = 4400 \text{ net points}$$

$$\text{Medium} / 7500 - (10 \times 300) = 7500 - 3000 = 4500 \text{ net points}$$

To sum it up, kills are important in the Battle format but mainly for the Kill Bonus. Don't let any razz you for dying regularly. It simply means you've engaged the enemy often earning you the opportunity to score points. Make sure, though, you haven't given too many to the opposite team.

## LOGISTICS

“We few, we happy few, we band of brothers; For he today that sheds his blood with me; Shall be my brother.”

- William Shakespeare



### Killer competitiveness

As far as tips go, this would probably be top of the list. For some this will be a turn off and they won't read past this paragraph. I'm all about having fun and I understand the casual gamer. I understand that some play because it's the Battletech universe. But, if you really want to be at the top, you've got to have the cold-hearted, frigid even, destroyer instinct. It's what drives me. It's what keeps me coming back for more even when I get burned out. Although I hate being bested on the scoreboards, I realize, in the long run it's making me a better player. It causes me to analyze a game to find out what I could've done better. It forces me to reconsider current setup and strategy. If it weren't for competitiveness I would've quit the game long ago. If I'm bored and on autopilot on a map and someone is having a really good game, I force myself to get into the zone. Realize that the great players can turn you into a great player if you let them.

### Key Mapping, Joystick, Controller, Mouse Setup

I know you are out there! You have the meanest, leanest, mech simulator on the planet. Those dual joysticks are sweet! The pedals are sick! That dashboard is fat! You're gonna live the Mechwarrior experience despite where you end up on the scoreboard. Here's some simple advice: ditch that setup, or pull it out your when your testing out a new variant or playing against Bots. Get yourself a good mouse, you have one right? Set your mouse to control your torso; torso = reticule. It's hard to beat the accuracy of a mouse. Use your NASA-like joystick in your other hand. Use the mouse for targeting. I

personally use a controller/game pad, whatever you call it, in one hand and the mouse in the other. I know, weird setup, but everything I need is on one side of the controller and it's small enough to fit snugly in my lap and light enough that if I get too excited I don't get a cramp.

As far as Key Mapping I have the following controls (commands) set for quick access. I have listed them mostly in the order found under Controls from top to bottom. These are the only ones I use. I have to be picky because I have limited buttons available and prefer to keep away from the keyboard as much as possible. Be careful! It is easy to overkill commands. Stick with the ones you use often.

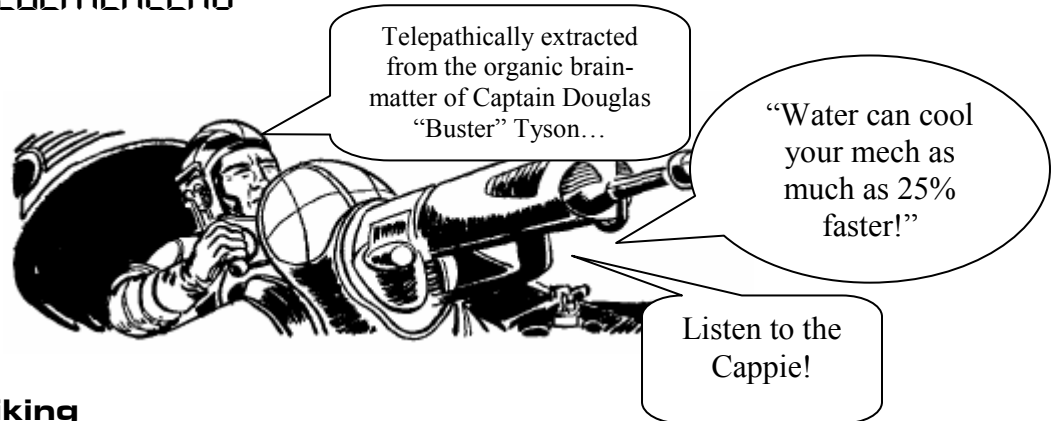
- ❖ Mouse - Fire\_Group 1 and 2, Crouch, Accelerate/Decelerate
- ❖ Set Throttle to 0% - Fast way to come to a complete stop.
- ❖ Target Object Under Reticule – Fast way to get a target lock and damage readout of the enemy you are facing.
- ❖ Target Next Enemy – To cycle through available targets.
- ❖ Toggle Zoom Window – I use Zoom regularly to improve accuracy.
- ❖ Toggle Radar/Map – Sometimes, by using the Map, it is easier to decipher the location of the enemy relative to your actual location rather than to your Torso.
- ❖ Toggle Radar Active/Passive – Being able to switch rapidly from Active to Passive and vice versa keeps you from being detected while giving you a “blip” of enemy radar contacts.
- ❖ Override Auto Shutdown – Invaluable to keep you up and running if over-heating. Do not use repeatedly or you will explode due to excessive heat. I usually only override once.
- ❖ Flush Coolant – Tap it often rather than use your reserves in large amounts.
- ❖ Look Back – Used to see if you are being followed, spied, or to dodge fire.
- ❖ Show Multiplayer Score – I check this often. You need to do so also, to find out how far back you are from 1<sup>st</sup> place, or how much cushion you have while in 1<sup>st</sup>. Becomes especially important the last minute of a game to help you decide how best to rack up points. Can be used to decide if suiciding is an option (whether you can afford to lose the 500 points). Lastly, use it as a motivating factor. If someone takes the scoring lead from me I'll know it. It helps me to get into the “Zone.”
- ❖ Select Next Nav Point – This is always easily accessible. I always want to know the enemy drop zone on every map. I know I can always find enemy mechs that way to rack up points.
- ❖ Toggle Light Amplification – Only used for Dark/Night maps.
- ❖ General Chat, Team Chat

Note: Do a one-time control setting for Override Auto Torso Centering. Once set, it remains that way indefinitely. Set it to prevent auto centering of your torso when you are not moving or moving slow. The default key is the semi-colon (;).

**TACTICS**

“War is much too important a matter to be left to the generals.”

-GEORGES CLEMENCEAU

**Alpha-Striking**

When Brawling with Heavies or Assaults in tight quarters or when most of the opposite team is sitting in Assaults (which means Circle-of-Death might not be the best option), you will want to bring a config with some heavy firepower packed in one punch. The structures, like buildings, may prevent you from getting more than one shot on an enemy and you want to make that shot count. In fact, any scenario where the enemy may be in view for only a few seconds is the time to bring out the hard-hitting weaponry. The key to Alpha-Striking is a simple rule: come as close in damage with an alpha-strike as the tonnage of your mech with...(sentence will be finished later). For instance, if you are piloting a Templar, you should try to get your alpha near 85 points of damage. The second part of the sentence above should finish, “...with a recycle time of 4 or less.” 4 seconds is enough time to get back in position to fire again even if the enemy has moved around the corner of the building. Remember, that enemy pilot wants to score points (more likely kills) as much as you so if there is a break in the action because of objects in the way, it’ll pick up again very soon and you want to be ready. Also, to a lesser degree, recycle times on crowded maps still play an important part to scoring points. In summary, a heavy hitting alpha-strike can knock a mech down, and destroy weapons, and the recycle time edge will allow you a bullet in the chamber for the unexpected, and give you the chance to rock a mech so that its aim will be off.

**Arty-boats**

For all the same reasons that make Longtoms effective (below), Artillery Beacons can score a lot of points in a hurry. However, they have very limited ammo (max of 6 per beacon with an initial armament of only 2), have a long recycle time and are hot. Some pilots use these skillfully, and some run ‘em as Gimmick mechs. The latter run right up to an Assault, in a medium usually, so it can’t move forward and stay there until their arties fall (7 seconds). They sacrifice themselves knowing that they will outscore their opponent because of the damage ratio. Even someone who just bought game can move a mech around well enough to do the same after only a couple of days.

## **Bombadiers**

These are usually jumpjet-capable medium mechs that can carry a Longtom. This is a legitimate tactic and requires skill; however (sarcasm activated), Tomming your own team within the splash radius is highly frowned-upon and may greatly sadden teammates. Although the damage from a Longtom is high, the recycle time and heat generated is prohibitive. But, since the splash radius can potential damage multiple mechs this can be a great way to rack up points.

## **Chaining**

Chaining refers to firing weapons one right after another in a “chain” rather than firing an alpha-strike (all weapons at once), with the intent of continuously knocking an opponent around to prevent return fire. Although this is truly effective rocking mechs around, from a point’s perspective it often doesn’t yield great results. I don’t remember ever seeing a chaining mech at the top of the scoreboard. On wide-open maps where a target will have difficulty finding cover this tactic could work. But, on maps with varied terrain or obstacles you are sacrificing some of the available firepower by not alpha-striking before the enemy ducks behind a structure or hill. It also will make you everyone’s favorite target, which could severely hinder you from making points. Even in close quarters you are never guaranteed to get off those extra shots, so better to fire all to ensure full damage and full points.

## **Heaters**

Mechs that use weapons that heat up a target to the point of quick shutdown. Without going into detail on the weapons that dump a lot of heat on a target, those weapons can literally shut down a mech in seconds even when flushing and over-riding shutdown. This is another Gimmick mech. Anyone can pilot one of these Heaters and shut down mechs because they are so effective. I don’t recommend this tactic as it doesn’t produce a lot of points. None of the normal heater weapons do any real damage, except the SRM’s.

## **Legging**

It’s easier to say in teamchat, go for the legs of such-and-so. Legs are easier to target; essentially the entire lower half of the mech in some cases. Plus, you got 2 of them to shoot at, and they don’t rotate like the torso. You can still score 2x on a blinking red or black leg and if you take out a leg you cripple the whole mech. You also make it an easy target for other mechs. In fact, if your leg is shot when you are fresh it will make it look to enemy pilots like you have weak leg armor. Once this happens be prepared to have your legs baked, grilled, barbecued or fried the next few shots. If you actually have leg armor they will quickly learn to leave your legs alone as you make them pay with an alpha-strike with all your weapons intact. Personally, I think there is more points to gain by going for the upper part of the mech where the weapons are; +25 points per weapon.

If you are fighting a mech that is boating a lot of single slot weapons on a section that could be a nice bonus (like an arm). Plus, I would rather partially disable a mech by destroying some of their potential firepower than leave a mech with it's weapons to take out mine. In that case, even if I'm able to kill the mech, my ability to make points has been compromised. I understand that going for legs may get you kills more quickly which might net you some nice Kill Bonus. But, so can the RT, CT, or LT. And, torsos can also be hit from front or back.

### **Machine Gun Boats**

These can make a, excuse the pun, boat-load of points. And, because the weight is so light and they only use 1 weapon slot, many can fit on a mech. Even when all slots are full of machine guns, there is still a lot of tonnage left for armor and speed, so M.G. Assaults are not only vicious but tough to take down. They do so much damage per second in groups that nothing can compete with them. The key is to put them on a mech with a 360 Torso Twist so that you can keep the reticule on your target. They also produce no heat, and a single ton of ammo lasts several minutes of continuous fire. Many pilots combine these with pulse lasers to be even more damaging, but heat then becomes an issue. M.G. Boats are Gimmick mechs. A Gimmick mech is any mech that almost anyone can pilot and score huge amounts of points without much skill. I don't recommend it.




### **Milking**

Milking refers to bleeding a mech of points before destroying it. If you are sure you can retain your weapons and come away mostly unscathed, and if you are sure there aren't other enemy mechs close by, AND, if you're sure there aren't teammates nearby, then you can consider stripping (taking off armor all over rather than a specific section) an enemy mech and then when you've bled it dry of points get the Kill for the Kill Bonus. After all, there might not be another enemy mech close by and the one you are facing is the only reliable way of scoring points at the time – might as well make as many points as you can while it lasts. There are drawbacks. If you take too long, and the enemy mech takes some of your weapons, you've lost future potential points. If you don't get the kill, you've lost points on the Kill Bonus. If other enemy mechs are nearby, they will pick you up on radar and hem you in and then you might not have much time to even strip a mech let alone destroy it. And, if teammates are nearby, that mech you've worked hard to milk, now has been killed by one of them robbing you of the Kill Bonus. I know what this last statement sounds like, but I stick by the Team Battle Strategy Formula: if everyone scores more points than they give up, the team wins. Get your points, get your kill bonuses, make sure you don't drag the team down, do your part. If you want to let a lighter mech get the kill for a bigger Kill Bonus, fine. If you have that much coordination with your team go for it. But, make sure the lighter mech can get the job done 'cause otherwise you have your back turned to the enemy mech that perhaps still has enough firepower to destroy a weapon or two, get a lucky HUD shot (the hard-to-hit cockpit causing your Head's Up Display to go screwy), damage your leg etc.

## **Pro-Blitzing**

There is a difference between this and the derogatory term, “noob-rushing.” Rushing into an enemy held location with reckless abandon while determined to just get in a couple of shots at a sniper who has frustrated you or a player you don’t care for isn’t smart. Rushing into an enemy held location knowing you can take on whatever mechs are there because they are damaged or have slow-recycle long-range weapons when you have overpowering brawler weapons is another matter. It is quite possible to rush in to a nest of enemy mechs and still come away with more points than you gave up. If your mech has 2x the DPS of the 2 enemy mechs, theoretically, it’s a draw. DPS even greater than 2x is most certainly possible in Battle/Team Battle. I go into specific detail about this in another section. Your success in Pro-Blitzing really depends on what weapons the enemy is carrying. It also depends on how stealthy you can be in getting to them. If you announce your position to the enemy by going active radar you will likely be torn up by long-range weaponry before you get there. The term “noob-rushing” is incorrectly applied to experienced Brawler, and Circle-of-Death players. You see the term pop up in chat because of the unbalance of a brawler against a sniper in terms of firepower, so in frustration they cry, “noob-rusher!” It’s kind of like a Knight against a confined Bishop or Rook. Normally the Knight has the disadvantage of limited movement and therefore less of an offensive threat but when the Bishop or Rook is boxed in, the Knight trumps.

## **Spawn-raping**



The instant attack of a mech that has just re-spawned in the enemy drop zone after being destroyed without the opportunity to return fire. From a point-perspective this is a smart move. Snipers do this often – get in position from a distance and watch chat for an enemy mech to be destroyed and wait for the Re-Spawn. I do this too...but, with Circle-of-Death. Works great because brawling fast-recycle weapons overpower long-range slow-recycle weapon that seem to be the choice for maps with drop zones far apart. What’s even better is that you don’t have to waste tonnage on detection/stealth components. You know exactly where...eventually...an enemy mech will be. If the enemy pilot that is being attacked is smart, he/she will ask for help in team chat. If too prideful to do that, better for you - can really rack up the points.

## **Stealing Kills**

The term stealing kills refers to killing a mech that a teammate has engaged first and that is damaged to the point that a single alpha-strike destroys the mech. I will rarely go after a fresh (green) mech. I cycle through the available targets and find the mech that is hurt the most. There are advantages. If the enemy mech is blinking red or black I will get 2x points. A damaged mech is less of a threat to losing my weapons and that means I can continue to score points even after the encounter. A damaged mech makes the Kill Bonus more certain. There are, however, unique situations where I might go after a fresh mech (fresh meaning no damage):

- If a fresh mech engages me, then I have no choice but to retaliate rather than turn my back and try to escape.
- If a certain mech is an imminent threat to me I may engage a green mech. I may consider that it is worth it to get in the first shot, possibly taking weapon(s) rather than try and pass by unnoticed.
- If the only mech I have on radar is fresh or if mechs on radar are damaged more but are too far away to justify making the trip.

There are just too many scoring reasons to not choose a damaged target. My teammates will damage mechs as I will damage mechs, which makes us even. There is no guarantee that the fresh mech I have been fighting won't be killed by a teammate who didn't even know I was in the vicinity. There is even the chance that the mech could be destroyed by his own team resulting in a Team Kill. There is no "tagging" mechs. If you are familiar with MMO's you know what tagging a mob is – no such thing in Mechwarrior. I can't attack a mech first and then someone else comes along and kills it but I receive credit...nope. My suggestion: when you come upon a damaged mech, don't spend time looking around to see if a teammate is also engaged with it. Just fire. The enemy mech will, and this game is all about who can react faster and who has the quickest trigger finger.

**Suicides**

Regardless of my personal opinions on the subject matter, from a Points PoV (Point of View, just didn't sound right Points Point of View), it can make sense to suicide. There is a 500-point penalty you suffer regardless of mech for a suicide. However, if you are close enough to an enemy mech – within ~25m – you do damage from the explosion (around ~45 pts for a 100ton mech suicide) and that just might be enough damage to kill a really hurt enemy mech. You are awarded the Kill Bonus. If you suicide in a light mech and get a kill you can actually make positive points. For instance, an Uller has a Kill Bonus of 500, minus the 500 points from the suicide, plus the points awarded by damage dealt x Damage Ratio = ~ +100 points. But, the lighter the mech the less damage is done by the explosion. It's hard to quantify, but I'd estimate about +1% per ton damage. Some facts about suicides: the HUD does not take damage. It takes 3 seconds from the time you hit the suicide keystroke for the actual explosion so it can take a little skill if trying to blow up on a fast moving mech. For those 3 seconds you continue moving in the direction you were going at the time. At the maximum distance (25m) the enemy in the suicide explosion only takes damage on the side of the mech where the explosion took place. As you get closer in the whole mech takes damage. A suicide will also guarantee you a fresh mech, meaning fresh weapons and, so, you must weigh the option versus the -500 point penalty. Note: many players consider suicides to be robbing them of a potential kill. And, let's face it, pilots suicide to prevent getting killed, although it still shows up on the scoreboard as a Death. I can almost guarantee that they aren't thinking about how they are helping the team when suiciding. Ultimately, if you look at it from the Team Battle Strategy Formula, you are losing 500 points, can you afford it? Is it worth it?



**MECHLAB**

“If you know the enemy and know yourself you need not fear the results of a hundred battles.”

- Sun Tzu

I’m sure you’ve heard the saying, “The battle is won and lost in the Mechlab”. This is a true statement. With over a hundred mechs and weapons, several electronic components, 3 armor types, ability to add/remove armor thickness, and the capability of adjusting speed and adding heat sinks there are literally millions of combinations of mech variants. And, if you haven’t exchanged your battle jumpsuit and helmet for a lab-coat for a majority of your playtime you’re shooting yourself in the mechanical foot. You are literally missing out on thousands of points.



My first couple of years of MW4 I spent at least as much time, if not more, in the Mechlab then I did in multiplayer. I would build a config (short for configuration or variant) then try it out on some Bots on Instant Action. Instant Action is your friend. Want a stationary Bot to shoot at? Try a Bot teammate. The pilot will scream in your ear a bit, but will do nothing for a few shots. Watch out, though. The Bot will eventually fire back unless you build a test variant with no weapons. I usually set the Instant Action map on Factory because it has a normal Heat Efficiency of exactly 1. This will help you determine how hot your mech runs. You can also host a server that is either locked or unadvertised so you don’t get bothered with players joining. This is good for determining damage or scoring. If you need to eliminate the Damage Ratio for testing pick a mech that has a multiplier of 1. I use the Kodiak.

There really are two facets to being successful playing this game online, multiplayer and the Mechlab, and the second requires an almost scientific analysis of facts and figures, ratios and formulas, and other higher mathematical skills as well as many other sciences. Although exaggerating to a large extent, you must approach the Mechlab in such a way. You will never have exceptional prowess on the battlefield before you have conquered the Lab. Once again, you must don both your flight suit and your lab coat.

There have been many times when a particular variant build looks amazing on paper, but doesn't perform well in combat. There are also builds that do well in some circumstances or against certain other mechs, but not so well during other scenarios. If you find a config that works well against lighter mechs name it something that indicates what its function is. If you find a variant that works well in hilly terrain, or wide-open spaces keep it and name it such. I personally build main variants and then tweak to take advantage of the map. If it's a cold map I might take off a couple heat sinks and add lasers or speed. If drop zones are very close I might consider adding Gyro knowing there will be some hard-hitting mechs. You even start to notice other player's patterns in mech building so you can predict what the opponent is going to bring and can counter it. Or if you know a player on your own team well enough you can compliment his/her mech with your own. Bottom line, if you find a mech you like, you should have many variants for it. Now, as Kai Ryssdal from American Public Media's Marketplace always says, "let's do the numbers."



## **Mechlab Electronics**

They are official known in the Mechlab as Components, but they are more commonly referred to as Electronics. These are the add-ons, the circuitry, the modules, that have no offensive capabilities but can provide protection, data, and enhance features. In this section I will go into detail about the usefulness of each component available. I have listed them as they appear from top to bottom in the Mechlab.

### **ECM**

ECM reduces the range you can be detected and also takes a little longer for enemy mechs to get a lock on you using missiles. However, the main thing I find useful is that outside normal range (500m for regular active radar) enemy mechs cannot target you, meaning, they cannot get a readout of your mech's condition. So, if you have a black spot such as a torso you don't have to worry about enemy mechs targeting that section purposefully. I do use ECM occasionally when I have a little range and expect to be ranged. However, there is a little known drawback to using ECM. If you plan on going radar dark (passive), don't. Enemy mechs still see you at 500m even though you can only see them at passive range (250m). I love to go radar dark and sneak up on a mech to do a little circle-of-death action (more on that later). Sounds contradictory, but that is difficult to do when I have ECM equipped. Most of the time I bypass this Component. There are even times when you want to be detected, want the enemy to find you. You can't make points unless you have a target.

**BAP**

This increases your sensor range to 1200m against regular active radar, 800m against mechs sporting ECM and 600m against passive radar. This is also a must have if you are using a missile boat as it decreases lock on time. I don't use BAP (except on missile configs). I always know where the enemy is at...their spawn. You have a built in guidance system called Nav Points (Navigation - mine is set for the N key). Go radar passive and sneak up on 'em. Or just go in guns blazing. Remember, as long as you score more points than the enemy you've won the skirmish. Other ways to detect the enemy: watching your teammates or weapon fire. A dead give-away is for buildings or gas tanks to blow up or trees crashing. I'll pass on BAP and use the extra ton elsewhere. But, where, you might ask? Coming up soon, promise.

**Jumpjets**

I've been looking forward to this one. There are some pilots, that, after reading this section, will have elevated blood pressure – maybe through the roof. I feel bad that these physical changes will take place, and urge those so affected, to take some deep breaths and stir up images of coastal white beaches and rolling surf and those fruit-flavored drinks that have the small umbrella in them. Better? Good, we can continue.

Jumpjets are useless. Yes, I said it, I'll say it again. Jumpjets...are...useless. (Sarcasm mode activated). For the rest of this discussion on Jumpjets I will refer to “you,” or “your,” or even “you're,” to those snipers that like to use jumpjets, not you - not the reader. These players often think that they are superior to those that pilot ground-bound mechs. These supposedly “elite” pilots look down on anyone that chooses to play a different style – like a Mardi Gras king parading around a float tossing beads to the masses (I lived in New Orleans for a few years and thought it appropriate for the football season). For Assaults, jumpjets can weigh up to 6 tons for mechs 95 tons or more. Even for 85 tons it's still 5 Free Tons. The tonnage can be put to better use. I bet “you” wish you had those tons back when I've snuck up on you using Circle-of-Death. What good will jumpjets serve then when a mech is within 100m? You can still be hit whether you're on the ground or in the air. And, actually, you can be seen easier and hit from more angles when you're jumping. You also have another cooldown to worry about. Gotta pay attention to those Jumpjets! You sacrificed tonnage for 'em, gotta use 'em now! Gotta show the Jumpjets some love! (Sarcasm mode deactivated). Look, I realize that there are good snipers that pop up just for a moment barely exposing their mech as they take the shot. Do they have a certain skill? Of course. Will they make a boatload of points that way? Probably not if using long-range, long-recycle weapons and wasting Free Tonnage on Jumpjets. I will go into more detail about this in the next section Styles of Play. The only time I will recommend jumpjets is on Battle Armors. Jumpjets weigh nothing for BA's. And, because they are so short, even the slightest terrain variation will prevent you from targeting or possibly even seeing an enemy. Jumpjets will allow you to view the battlefield from a higher perspective. Because they are so tiny, a jumping BA is very difficult to hit.

**LAMS**

These will intercept and destroy some missiles in a salvo. They are essential on a missile map. Probably, the best known and played missile map is Manorhouse. A missile map is one in which the majority of players predominately take missile-laden mechs. These kind of maps are few and far between. More common missiles you will see are the CSTRK 2, 4, and 6's. They are short range (250m) and have instant lock on. They are primarily used on Medium and Light mechs. I don't endorse using LAMS except on a missile map. LAMS weigh 1.5 tons regardless of the size of the mech. I can't see giving up 1.5 tons for a defensive measure that may not be useful at all during the course of a game.

**Enhanced Optics**

Normally Zoom (Num 0 on your keypad) has a Zoom Window of roughly 16% of your entire screen. Enhanced Optics has a Zoom Window around ~65% of your screen and ~4 times larger than normal zoom. Both normal Zoom and Zoom with Enhanced Optics magnify objects ~11x. Again, there are certain maps where this can come in handy and it only weighs 1 ton. Flat long-range combat with drop zones around 1000m would be ideal. A map I use this on is Coliseum. The drop zones are just about 1000m and so targets are usually always in range with 1000m weapons like the Cultr2's. Moving laterally at high speeds I will zip back and forth on my side of the map shooting targets at maximum range. Enhanced Optics allow me to target a specific section of a mech I would ordinarily be unable to moving so quickly from side to side. Generally, though I can make better use of 1 ton than E.O.

**IFF Jammer**

When a reticule passes over a mech with IFF Jammer it remains Green instead of turning the normal Red. Red would normally indicate you have an enemy in your sights. This is very useful on dark maps or maps at Night or even maps that have weather. It becomes even more useful if there are a lot of players. Since encountering a mech is likely to happen more often on maps with full servers, one tends to hesitate more rather than take a chance on shooting a teammate. It is even more effective if both teams have mechs of the same chassis that sport IFF. There usually isn't any way to distinguish 2 identical mechs except for the default team color. City maps like InnerCity have long corridors where mechs disappear in the darkness after a certain distance and scanning for a red reticule in the hopes of finding a target in the shadows becomes nearly impossible against IFF. However, IFF does not work within 200m. It only weighs 1 ton, but if it is daylight, I would suggest saving the ton for something else.

**Advanced Gyro**

This reduces weapon knock by roughly 50% and also helps to prevent being knocked down. It's hard to quantify how much knock down is reduced by. From experience, I would say I never get knocked down by a single mech regardless of weapons, but if hit by more than one mech at the same time I can still get knocked over. I rarely use Gyro. A knocked down mech is a mech that will most likely die in seconds giving you a fresh

mech with fresh weapons. Fresh weapons means generating a lot of points. There are times when I have no weapons left that I wish for the knockdown. The reduction of knock by 50% sounds impressive, but whether I get knocked by 100% strength or 50% or 25% it will still be enough to throw off my shot and I will still miss. If I wait and absorb the first hit to guarantee I can fire after taking the knock, it still doesn't require much more adjustment with or without gyro. Generally speaking, the only time I use Advanced Gyro is if I know I will be facing RAC5's. These are machine-gun like but do more damage and create constant knock, but jam easily so they are used only by those with experience. However, using tonnage for what *might* happen is never prudent in my opinion. For most Assaults, Gyro weighs in at 2 tons. There are plenty of other options to use that tonnage on.

## **Armor**

There are, currently, 3 different types of armor that can be added to a mech; Ferro Fibrous, Reactive and Reflective. Mechs also have Inherent Armor on top of Internal Armor. Inherent Armor is additional armor that covers every section and prevents the infamous "1-shot kill." Internal Armor is the armor under the CT (Center Torso) and is the last line of defense before your mech is destroyed after all armor and Inherent Armor is stripped from a section. When a black right or left torso receives damage it goes to the CT. There are two types of Internal Armor; Endo Steel and Standard. Endo Steel weighs less providing as much as 4 free tons. It doesn't provide as much protection, however. For an Assault, Standard Internal Armor will withstand around an extra 10-15 points of damage before the mech is destroyed. I look for mechs that have Endo Steel. Many weapons alone do at least 10-15 points of damage. It really doesn't make much difference and besides, if that section is black all weapons would be destroyed anyway. Each mech already comes with either Endo Steel or Standard. Only adding Ferro, Reactive and Reflective is under the control of the pilot. Ferro is the lightest allowing more free tonnage but provides the least protection. 30 points of protection are provided for each ton added. Reactive provides 50% Damage Resistance against Ballistic weapons. A better way to think of Damage Resistance is Damage Absorption or negating damage. Reflective does the same against Beam type. Reactive and Reflective weigh more providing 20 points of protection per ton. I only use Ferro. Players generally use a combination of weapon types and sometimes all 3 (missile, beam, ballistic). If you face an opponent who is using weapons other than what your specialty armor is made for, that extra tonnage is wasted. Tonnage is at a premium. To give an extreme example, full Reactive/Reflective for a 100-tonner weighs nearly 13 extra tons over Ferro.

## **Chassis Stats [Mechlab, Chassis tab]**

These are listed in order as they appear from left to right in the Mechlab.

### **Acc/Dec**

(Acceleration/Deceleration) – The higher the number the faster you can start and stop. Although, not important enough to dismiss a mech chassis, these 2 stats are really useful.

They come into play often in short-range maps with a lot of obstacles like walls, burned out buildings and the like. They allow you to get out into the open quickly to take a shot and get back under cover to avoid return fire or detection. Often times, mechs with high Acc/Dec can Hit-and-Run without the enemy even knowing where the fire is coming from. Generally speaking, the less a mech weighs, the greater the Acc/Dec, however, same tonnage mechs can have varied Acc/Dec and is something to consider when more than one mech fits your playing style. Acc/Dec also can be useful in Circle-of-Death while behind an opponent. If done right, you can always stay behind the mech you are circling while it is trying to turn.

**Reverse Speed**

Although this is not specifically mentioned in the mechlab, Reverse speeds vary widely and I thought it might be worth mentioning. An Annihilator going 37kph forward moves 78% of that speed in reverse. A Tenchi at 103kph is reduced to 36% in reverse of its forward speed, while a Dasher maxed out at 163kph goes 44% of its forward speed in reverse. I mention this because it could negate any advantage you might have in Deceleration when moving back under cover.

**Turn Rate**

One of the more important stats to look at when choosing a mech. Maneuverability gives you an advantage over the enemy. Turn Rate determines the radius of the circle a mech makes when turning. The larger the number the better, helping you “turn on a dime.” Turning assists you in navigating tight spaces and works in both forward and reverse. In reverse, however, you turn much sharper going the same speed. That is why to counter Circle-of-Death many pilots will hit the reverse button. Turn Rate is very important in Circle-of-Death so that you can swing by the front of the mech quickly hopefully causing the enemy to miss. It is also important in tight quarters and change of direction. Want to dodge enemy fire? Go from heading toward the enemy to turning to the side. The faster a mech can pull this off the less likely you will get hit.



**Torso Twist**

Along with Speed the most important stat a mech could have. With a Torso Twist of 135 or more degrees, you can almost always have your target under your reticule and that translates to points. If you have the opportunity to always shoot at your opponent you rack up points, work on a section for the kill, knock your opponent shots off, hopefully take some weapons, and possibly knock the mech down. Obviously, if you can't twist around to get the enemy in your sights you get nada. A High Torso Twist is essential for Circle-of-Death. It also makes Hit-and-Run and Brawling more effective. You can crest a hill running laterally making you harder to hit and if the mech you are targeting has moved you can fire to the left or right behind you. For Brawling, if you have a mech that is somewhere behind you, it is faster to turn your torso than your mech. If you move out from behind a wall to take a shot you don't have to turn your mech to face your opponent. Turn your torso before you even move from behind cover then Acc, take your shot and Reverse back to your original position. Remember, that in your Geometry class, you learned that the shortest distance between 2 points is a straight line. A good torso twist will get you the shot and then under protection in the quickest time. If there was no such thing as Torso Twist, imagine all the turn adjustments to get in position to fire and then get back under cover?

**Twist Speed**

How fast your torso twists in degrees/second. This is important because it determines how fast you get your reticule on your target and start racking up points. It also effects how easy it is to keep your reticule on a moving target. Let's say you are on the receiving end of Circle-of-Death. If the enemy mech is moving really fast, even if they are in your shooting window you might not be able to twist fast enough to get a shot off. Some mechs have insane Torso Twist speeds. In fact, some of them are too fast to be extremely accurate if you aren't used to it. You can adjust Mouse Sensitivity under Options to help with this. I find that a Twist Speed of 60 for heavier mechs and 70 for lighter mechs works fine.

**Elevation Limit**

Determines how many degrees your mech can swivel its torso up or down allowing you to fire higher or lower than level (straight ahead). This is somewhat useful on mountainous maps as you might be able to shoot from below or above your opponent and they can't return fire. In fact, some mechs were designed for anti-aircraft. However, a pilot under Options can keymap to Look Down and this does allow weapons fire almost directly beneath from both arms and torsos regardless of Elevation Limit, and some pilots have perfected this. This stat has little affect on my mech selection and I wouldn't focus on this.

**Heat Capacity**

This determines how much heat a mech can withstand before becoming impaired or shutting down. Think of it as a gas tank. With a large tank it can hold more gas, but it is

more expensive to fill it. Or, think of a room with a single heater. The larger the room the longer it will take to heat. The smaller a room, the more effective the heater will be. It's the same with Heat Capacity. A mech with a high Heat Capacity will take longer to overheat, however, heat sinks become less effective. A mech with a low Heat Capacity heats up quickly, but heat sinks are more effective. This is of no consequence. It is safe to ignore this when choosing a mech.

### **Speed**

Along with Torso Twist, this is the most important factor in determine a mech. The faster you can get to the action the sooner you can start racking in points. When you die and re-spawn this lets you get right back to the action. Without action, you don't score points. All of my mechs Heavy on down go at least 85kph. The most used Heavy goes 103kph. All of my Mediums or Lights go at least 105kph. Even my slowest Assault goes 58 and that's because I only use it for city maps thanks to its 360 degree Torso Twist or when drops are 600m or less. A regular Assault of mine goes 70kph, with a variant that goes 75kph. Speed also has defensive properties. The faster a mech is moving the harder it is to target and the smaller the window it has to make a shot. It is also more difficult to target a specific section on a fast moving mech. Speed is of utmost-importance in Circle-of-Death. The sooner you can whip around the front of the mech out of its Line of Sight the longer you last and the longer you can rack up points. I can't say enough about Speed. It factors enormously in my mech selection.

### **Heat Efficiency**



The higher the number, the easier for a pilot to manage heat - by firing only certain weapons, or flushing coolant, using Coolant Pods, or standing in water (which, by the way, is 25% more effective in cooling your mech.) The number represents how effective a mech is in cooling itself and goes up or down with weapon selection and heat sinks added. Don't rely on this number, though – test it out on a map like Factory that has a Heat Index of 1 (average). See how many times you can continuously fire before your mech starts slowing down due to heat (orange on the heat gauge). See how many shots you can get in before shutting down. See how many total shots you can fire before shutting down when using coolant flush. The number representing Heat Efficiency is deceptive. It seems to mainly take into account the total heat generated by all weapons when fired and not their recycle times. How easy it is to control heat is eminently more important than this number.

### **Damage Ratio**

A mech's point multiplier. Multiply damage done by this Damage Ratio and that is the amount of points you will score hitting anything not blinking red or black (in which case 2x). This is important as different chassis of the same tonnage will usually have different Damage Ratio's and therefore have the potential of scoring more. However, don't choose a mech based solely on its Damage Ratio. If the factors are close to equal on 2 mechs like speed, and torso twist, and you must decide between the two, get the one with a better Damage Ratio.



**Stats to Ignore**

Ignore the following stats listed and the line graphs under the Chassis tab as they have no relevance in selected a mech in Multiplayer:

Firepower  
Armor  
Speed  
Rel. Heat Efficiency  
Mech Value (toward Bottom)

**Mech Selection****Coolant Filter**

There is a number of criteria to filter mechs. The following is my filter and I use it with every mech. Often times, a mech won't even get through the first benchmark. It makes mech selection much easier. Still, there have been times, even after spending so much time in the Mechlab, when I never would've considered a mech and yet later on I realized it could work. I suggest the following:

- 1) Available weapon slots. You first need to determine what weapons best fit your play style. For my recommended weapons see the section following. Mechs that cannot accommodate the type and number of weapons I am comfortable with (a very limited selection) get dismissed instantly.
- 2) Torso Twist. A mech needs to have a minimum of 120 degree torso twist before I will even consider it. I will be throwing away too many points if I cannot target a mech most of the time.
- 3) Speed. If upgrading the engine for more speed is too costly in terms of tonnage it gets dismissed. This step might take a little longer to determine how many tons it will cost to get the mech near your optimum speed. It helps to find a mech in the same tonnage category that you like with enough speed. For instance, my barometer for an assault is the Battlemaster IIC. My normal variant goes 70kph. If it is too costly to get another assault close to that speed then it gets dismissed.
- 4) Free Tonnage. Mechs equal in total tonnage do not necessarily have the same Free Tonnage. Free Tonnage is the number of tons you have to work with when everything is stripped off a mech including armor, electronics, heat sinks, weapons, and minimum speed. Endo Steel Internal Armor weighs less and therefore provides additional Free Tonnage. Free Tonnage directly affects weapons loadout so, as mentioned previously, I carry very few electronics, if at all. If the Free Tonnage cannot accommodate the weapons I usually carry the mech is dismissed.
- 5) Turn Rate. This doesn't always dismiss mechs for me. This can compliment the Torso Twist making up what the Torso Twist lacks and also is an excellent offensive and defensive tool. It is possible for a mech to have too great a Turn

Rate – usually 140 degrees. It is often just too responsive to turn and fire and still be accurate.

Here are my suggested mechs that stand out from the rest when focusing on the Hit-and-Run, Brawler Style of play.

### **-Assault-**

**Battlemaster IIC** (85 tons) – There are those that claim that this is a noob-mech. This is far from the truth. The Battlemaster IIC has only 2-slot ballistic hardpoints. It cannot carry any ballistic weapons that require 3 or more slots. It has no omni-slots (versatile slots that can mount any weapon type). It has the poorest average Acc/Dec of any mech 85 tons or lighter. It carries limited electronics (LAMS, Gyro), and is knocked over easily (without Gyro equipped). However, it's strengths are Speed and Torso Twist which are the key elements to scoring points, plus it has Endo Steel which gives you more free tonnage. Discounting the 2 Assaults that have 360 degree torso twist, the Battlemaster series are tied for first in this category at 135 degrees. As far as speed goes, engine upgrade weighs very little. My slowest variant goes 70kph and my fastest 75kph. Minimum speed is 65kph (already fast) but only requires 1 ton to upgrade speed to 70 and 2 more tons to reach 75kph. The Torso Twist Speed is also tied for 1<sup>st</sup> with 4 other Assault mechs.

**Blood Asp** (90 tons) – The highlight of the Blood Asp is its 360 degree torso twist. It beats out the Annihilator, also 360, because of its ability to upgrade speed better -although still slow- and its Damage Ratio. The Blood Asp is ideal for tight spaces like city maps. Even if you get caught up turning because of buildings you can still always target the enemy under reticule. The other bonus is that the majority of ballistic weapon slots are in its horns (S1 and S2 slots) so even with the destruction of arms and torsos there is still a good deal of firepower available.

**Longbow** (85 tons) – The premiere missile boat (a boat is a large quantity of the same weapon). It's got good speed, has BAP and LAMS and good missile slots. It's weaknesses, however, is that it is a large target being very wide, and it has a poor torso twist. The secret to using this mech is to launch a volley of missiles and then turn sideways to enemy. The longbow is wide but very thin.

**Warlord** (100 tons) – I only use this on an extremely cold map because of its ability to mount a lot of lasers and streak 4's.

### **-Heavy-**

**Tenchi** (65 tons) – This is my favorite Heavy. It is extremely fast - stock is 85kph - and an engine upgrade at that point is only 1.5 tons. Only 4 other heavy mechs have a better Turn Rate. Discounting the 360 degree torso twist heavies, it

is tied with 5 other mechs for best. There is only 1 heavy better in Acc/Dec. Perhaps, one of the most beneficial features is that it is possible to build a Tenchi with no weapons in its arms or torsos – only in the S1 & S2 slot. This is the premiere Circle-of-Death mech.

**Vulture** (60 tons) – I only use this for a Battle only city maps. It is built for SRM4'. It has decent speed (my config goes 80kph), and has 360 torso twist. Plus, you don't have to have any weapons in the arms, which can get blown off easily.

### -Medium-

**Fenris** (45 tons) – A very potent medium. Some pilots complain that this mech doesn't take proper damage. I say get lasers. I've never had a problem hitting this mech where I want, when I want, with lasers. And, I love to outfit it with lasers. Add some streak 4's and this is a deadly Circle-of-Death mech able to take down mechs much heavier. It has speed, good torso twist, and Endo Steel to give you some extra free tonnage.

**Gesu** (45 tons) – I only use this for a specific map. Load it up with machine guns, pulse lasers and SRM 4's, not the Streaks. They cause heat and catch the mech on fire obscuring vision.

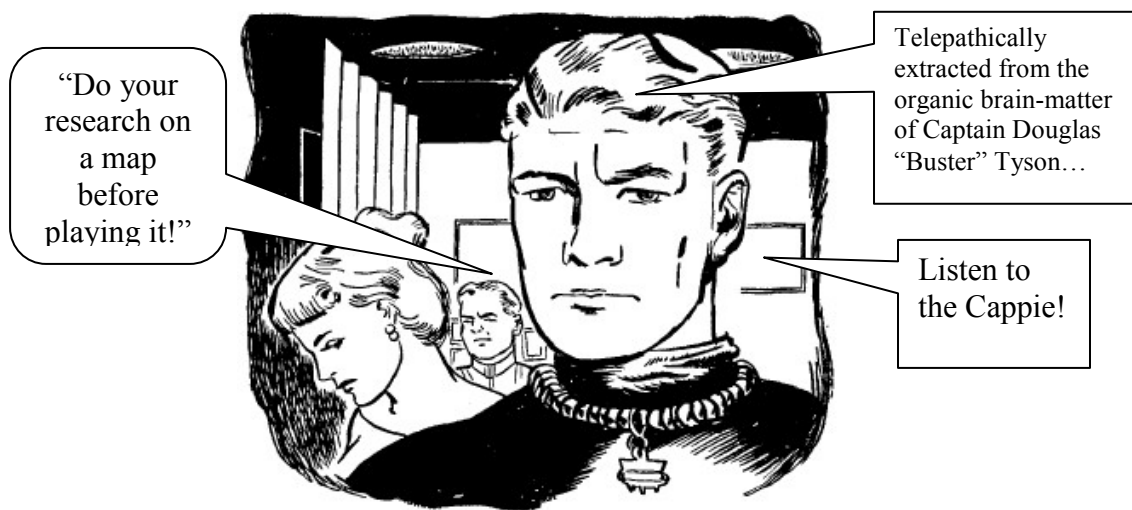
**Hunchback** (50 tons) – Remember, in the Alpha-Strike section, I suggested trying to get as close to the tonnage of your mech in damage with a recycle time of 4 or better? I can get within 2 points with this mech and meet the recycle criteria. It runs a bit slow at 80kph, but it packs a punch at medium range. This mech has a good turn rate and decent torso twist.

**Reaver** (40 tons) – This is nearly identical to the Fenris in stats and maneuverability but weighs 5 tons less. You won't be able to equip it with quite the firepower of a Fenris, but it does have a 2.2 Damage Ratio compared to 1.92 for the Fenris. Use this mech to crest hills and Hit-and-Run or Circle-of-Death.

### -Light-

**Solitaire** (25 tons) – Also a laser boat, it's fast, starts and stops on a dime, has a more controllable turn at 91 degrees. Its weakness is that a good portion of its fire power (33%) is in a large gun on shoulder and can easily be destroyed.

**Wolfhound** (35 tons) – This is a strictly beam oriented mech. It is fast, like all lights, turns on a dime (140 degree turn), and has a decent torso twist (120 degrees). The turn rate is a little difficult to control as it is almost too responsive but it helps make up for the lesser range of the torso twist. This is a great Hit-and-Run mech as well as Circle-of-Death. On dark maps the ECM and IFF can come in handy.



### -Battle Armor-

Battle Armor or BA's can be very effective on the battlefield because of the high Damage Ratio they warrant – higher than even the lightest mechs. They have very little armor even maxed out. All my variants have no armor, zero. You have so little tonnage to work with, use it for weapons and secondly, speed. And, besides, even weak mech weapons cut right through BA's. BA's have no Omni Hardpoints (Omni-slots). Components (Electronics) weigh as much for Battle Armor as for mechs so don't waste tonnage on these. It can be tempting to get Gyro, but, because mech weapons decimate BA's, it does you no good to keep your feet but have no weapons or simply to die. Is it possible to Brawl with a BA? I'm crazy to ask the question, right? Wrong. If there are other heavier team mechs nearby, I'm betting the enemy takes them on because they are more threatening. Once occupied, then you go to town. BA's are considered by many low-threat, can't do damage, and the common strategy is to leave them until you get rid of the bigger mechs and then take care of cute little Battle Armors. What those same pilots don't realize is that you can pack a punch on a BA. One of my variants hits for 32.5 damage, and then multiply that by 4 because of the Damage Ratio: equivalent in points to an alpha strike of a 130 by an Assault with Damage Ratio of 1 or less. It's quite possible to take a light mech 1 on 1 if they miss 2 or 3 shots. And, BA's are the king of points/second. A variant of mine can rack up 44 points per second if left alone – even more if I can get in close for a Battle Claw to go to work. Battle Claws only have a range of 10m so you have to be right up next to a mech, but do 10 damage every 2 seconds. If you can get up to a mech undetected, you can rack up the points. Try to stand between both legs so that the mech gets caught up on you. If you are right up against the mech you won't take damage, however, if the mech is able to move and bumps you, you'll take damage. Also, if you are directly up against a mech, you don't have to go for a leg. I know it's a big, easy target. But even if you end up directly between the legs, the enemy mech can still turn and then that leg you were chewing up is no longer in range or is blocked by the other leg. The other option is to look up and use that Battle Claw to hit the crotch area between the legs which transfers damage to the CT. Battle Armors can mount regular mech weapons, but it's not worth it. BA weapons pound-for-pound do

more damage and weigh considerably less. Be prepared to die a lot in a BA. Be prepared to kiss your pride goodbye. I consider myself a good BA pilot and I expect to go 1 and 5 (1 kill per 5 deaths). I shoot for 1 and 4. One last particular on BA's. Since they are so small, specifically in height, they usually are completely submerged in water, which makes a great place for them to hide. Although IFF weighs 1 ton, if you can find a config with adequate weapons, it might be worth getting the component with the remaining tonnage and then get wet. On to the BA's!

**Infiltrator** (20 tons) – I don't often advocate long range over 750m, but the weapon slots dictate it. It has 360 degree torso twist, is one of the fastest BA's, and is one of the smaller BA's which makes a small target. Running side-to-side and staying hidden, this BA makes a point-lovers dream. The main reason? It has the highest Damage Ratio of any mech or Battle Armor...period (6).

**Kanazuchi** (20 tons) – This is the “Assault” of the Battle Armors. It has more weapon slots available than any other Battle Armor and a good mix of different slots as well. It can be slow, with a poor torso twist. It also is tied for the worst Damage Ratio at 4. But, this mech is made for straight ahead, ignore if you dare.

**Standard** (20 tons) – I love lasers and this Battle Armor can pack a few. Lasers do pinpoint damage so if you can find a mech with a blinking red or black section you can score a lot of points. Brawling lasers have a longer range than mech lasers of similar damage so go where the action is but stay back and let your teammates occupy the attention of the enemy. Lasers give no knock so you can freely fire and not draw attention.

## **Weapons**

I haven't given specific configurations yet, leaving out what I actually pack on my variants. Fact is, I use so few different weapons that it is easy to figure out where weapons go on the mechs listed above. I'll do a summary at the end of this section to wrap it up. I have listed them in order of appearance from top to bottom in the Mechlab. Oh, and if I haven't mentioned a weapon in this section, it means I don't give it a seal of approval for the Battle/Team Battle format.

### **-Lasers-**

**Medium Laser** (MDLAS) – These, in bunches, can do decent damage, have fast recycle times, and have no lead-time. Many weapons take time to travel over distances and so it is necessary to “lead” your reticule a little in front of the target so that the enemy mech moves into the position where the shots have been fired. Lasers have no travel time. They are instant. So, whatever is targeted under your reticule is what will be hit. This makes lasers very accurate when performing Hit-and-Run and Circle-of-Death. It helps you rack up more points by hitting a damaged section instead of spreading damage over more than one section (like some Ballistics) and they are very effective against fast mechs and lights – much

easier to hit with no lead-time. The reason I choose Medium Lasers is the 3 second recycle time. They are much more heat efficient than ER Medium Lasers which only have a small damage increase and 100m extended range but nearly twice the heat. If I am on a cold map, I will replace a couple of the medium lasers for ER Medium Lasers.

**Pulse Lasers** (Medium and Small Pulse and X-Pulse) – I only use these on Circle-of-Death mechs in combination with Clan Ultra AC5's. They have limited range from 150m – 400m but they do amazing DPS (Damage per Second). In fact, it is hard to find any weapons that do as much DPS as pulse lasers. But, they are only effective if you can hold down the fire button and that is why they are used in Circle-of-Death, and to a lesser extent, Brawling. In tight, closed spaces with lots of obstructions these are not recommended because they do little damage in alpha strikes. You must be able to target the enemy for an extended period of time to rack up points. I do not use them in quantity. They are very hot. You can add one or 2 of these on a mech and not have to waste tonnage with heat sinks. Set these to a different weapon group because you don't want to add extra unnecessary heat by firing these limited range weapons at a target out-of-range, yet in range of other weapons.

**Heavy Medium Laser** (HML) – This is the Brawler workhorse. Only weighs 1 ton, yet does 6 points of damage every 4 seconds and although a little heat-heavy, 2 of them can be put on a mech without much heat problems on an ordinary map. They have the same recycle time as the Clan Ultra AC 10's so are a perfect fit for alpha strikes. HML's do take up 2 slots though, but only weighing a ton with decent damage and no heat sinks required, it's a slam dunk.

**BA Support Laser** – Usable only on a BA. Best all-around weapon in a BA arsenal if you can fit several on your Battle Armor. It has good range at 400m, and its recycle time is only 2. However, it only does 2 points of damage. So, you might question whether it is really worth it. Well consider DPS. It does 1 point per second (2 pts/2 seconds) multiplied by the Damage Ratio of 4 – 6. So minimum, you're getting 4 pts/sec, and max 6 pts/second. On the Kanazuchi I can fit 4 of these, so that's 32 pts/sec not counting any other weapons in my loadout (lots of weapon slots on a Kanazuchi). On the Standard I can fit 3. If I had a BA with more Beam slots I would fill them with this weapon. Its weight is very light - tied with a couple others for first place.

**BA Assault Laser** – This is the granddaddy of punch. This does more damage in one shot than any other BA weapon. Just one of these will do 8 points of damage. The recycle time is slow to my standards and the range is weak. However, if you are on a map where drop zones are very close consider packing a couple of these on. Remember, from above, I mentioned I have a Kanazuchi that packs a 32.5 alpha strike? That variant has 3 of these. Hit a light mech with these, like a Flea, and they just might steer clear next time or at least come at you warily (which is preferred so we can still rack up points).

**-Missiles-**

**BA SRM Pack** – These do 3 damage and have the same recycle time as the BA Support Laser (2), so they make a great combo. You should be packing as many Support Lasers and SRM Packs as you can on a BA. They also provide knock; 3 or more will throw off a shot even from an Assault. But, it also draws attention and since it's every 2 seconds you just might upset that Daishi so be ready for full engagement. The drawback to the SRM pack is limited ammo. It comes with 24 salvos so that's 48 seconds of continuous fire. The good news, you die often so you'll get your fresh ammo.

**LRM20 + Artemis** – These go on my Longbow missile boat. The Artemis allows almost instant lock on time. The damage is sweet at 20, better recycle time at 5 than the Clan LRM's, and they have 1200m range. So, if you get a lock on an enemy mech at 1000m, which is the maximum visual range on most maps, and they move beyond that range the missiles will still hit their target. You can actually get a lock, move beyond 1000m and fire and still hit your target as long as you do it before losing lock. Be careful though; the faster you can obtain a lock the faster you lose the lock. In long range combat the recycle can be almost perfect if you time your salvo just as the previous salvo is knocking the enemy mech around. If you pack many of these on a mech make sure to add ammo. Heat really isn't an issue that your coolant flush can't handle.

**Heavy Rocket Launcher (HRL)** – I often don't use these except on certain maps when I tire of normal weapons. These can hurt at 20 points per every second. They do spread damage though. They generate insane amounts of heat. And, they suffer from ammo exhaustion. Their strength is damage and incredible knock and since there is only a recycle time of 1, you hit the enemy mech before it has a chance to recover. It is nearly impossible to have more than 2 of these in a brawler situation because of overheating.

**\*SRM4** – I use these only sparingly for close in brawling only, usually for battle and not team battle – but, not for the obvious reasons. The main reason I try and limit their use is because they can produce a lot of lag for players that don't have up-to-date systems or are on dial-up. They are direct fire and have 250m range so you'll need to be close, but they do decent damage at 6 with a recycle of only 2. They also generate heat upon contact and they catch a mech on fire obscuring vision, especially in 3<sup>rd</sup> person view. A mech full of these can score a ton of points if the pilot can be accurate with these direct fire missiles.

**\*CSTRK4** – This is identical to the SRM4's, but it has instant lock on capabilities. If your reticule is on an enemy mech and you fire these, they will track your target following it until they hit, possibly miss, collide with something else or be destroyed instantly when reaching maximum range (250m). These missiles can also be partially or wholly shot down by LAMS, but they are much

easier to use than the direct fire SRM's. They don't weigh a lot, do decent damage, and are one of those weapons that if you have the extra tonnage you should add them to your mech.

\*I choose the 4's over the 2's and 6's. The 4's do double the damage of 2's for only 1 ton more. The 6's do not do double damage over the 4's and require 2 weapons slots instead of 1.

### **-Ballistics-**

**BA Battle Claw** – As explained above, the Battle Claw is devastating doing 10 damage every 2 seconds but has a range of only 10m. It also requires the most Ballistic slots of any BA weapon.

**BA Sub Machine Gun** – A must weapon if your BA has a Ballistic slot and expecting short range combat. A single Sub Machine Gun will rack up 1 point/second x Damage Ratio. Even for the Kanazuchi with a Ratio of 4 that's 4 points/second and 6 points/sec for the Infiltrator. It only takes up a few weapon slots and weighs very little. The drawback? It jams when continuously firing for about 4 seconds. The cooldown after jamming is also about 4 seconds.

**BA Assault Rifle** – This is the long-range solution for BA's. They have a very respectable 800m range. They do decent damage at 5.5, but the recycle time is very slow at 6. Ammo isn't a problem with 32 rounds. That's over 3 minutes of continuous fire. Oh, and this weapon generates significant knock, which could save you if in a mech's crosshairs.

**AC10** – Usually I go with the Ultra AC10's, but occasionally I mix it up because other pilots get accustomed to your mechs and play style and counter it. The AC10 has a quicker recycle rate at 3 and a greater range (600m), but less damage at 10. It has good knock and plenty of ammo.

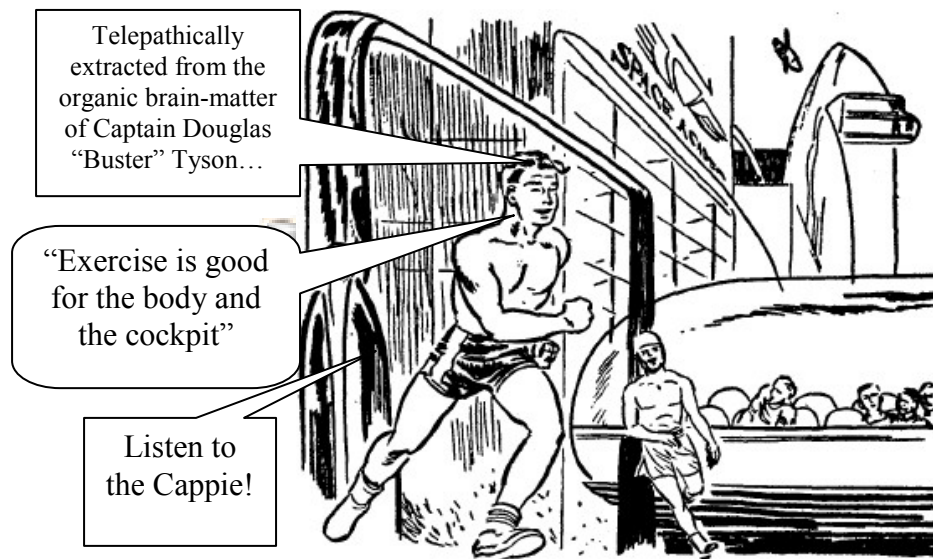
**Clan Ultra AC5** (Cultr5) – With several coupled together (4 or more), this is the most effective weapon a mechwarrior can wield. It's recycle time is insane at 1.5 seconds and does good damage (5) and only weighs 8 tons, with a range of 750m...and gives significant knock. That knock combined with the very short recycle time will frustrate enemy pilots to no end. Just 4 will rip a mech to shreds in Circle-of-Death and 6 of them will almost ensure you winning a Battle match. Ammo is passable, but not outstanding, allowing continuous firing for 90 seconds.

**Clan Ultra AC10** (Cult10) – One of the highest DPS weapons available, period. At a very respectable 4 second recycle and 18 damage that is 4.5 damage/second. Several of these together make a pulverizing alpha strike with incredible knock, and it has good range at 500m. The weakness of the Ultra AC's (including the UAC5's) is that they fire a double shot with a single squeeze of the trigger, the 2<sup>nd</sup> shot following the 1<sup>st</sup> by ~.25 seconds. This can cause damage over more than



one section if the mech is moving fast. It can even cause the 2<sup>nd</sup> shot to miss entirely, in which case damage is halved to 9. For this reason, Ultra AC's are difficult to use against mediums and lights. Ammo is sparse because of the double shot as well, but if you are aggressive you shouldn't need to pack additional ammo. If you stay back at range you will find yourself out of ammo quickly.

Summary: Discounting the BA weaponry, I've listed 10 total weapons, but truth is, I use only 6 regularly. The other 4 are map or scenario specific. For Mediums and Lights I use the Medium Lasers and Cstrk4's. For Heavies and Assaults I'll use the Cultr5's and Cultr10's with Pulse Lasers or Heavy Medium Lasers. For points you would be hard pressed to find better.



## **STYLES OF PLAY**

"The possibility of war increases in direct proportion to the effectiveness of the instruments of war."

- Norman Cousins

### **Brawling**

Engaging the enemy at short range.

I also use this often. It's a simple tactic. Bring your short-range and/or high-DPS weapons into melee. Hit the same section over and over until it's black. Go for as high an alpha-strike as you can without sacrificing recycle times. With brawling there is

usually no cover. One of you stands and one of you falls. You've got to do significant damage your first hit especially if you take them unawares hopefully destroying one or more weapons. However, if you miss, or hit a section without weapons, you will want to fire again as quickly as possible making recycle paramount. Circle-of-Death often comes into play in Brawling so the attributes mentioned in that section still apply. Hit the same spot over and over. When a section blinks red any future damage is twice the points. The same with a black section. Weapons are destroyed when a section starts blinking red and that nets you extra bonus points. Knock weapons are important in Brawling – throw's off your opponent's shot.

### **Circle-of-Death**

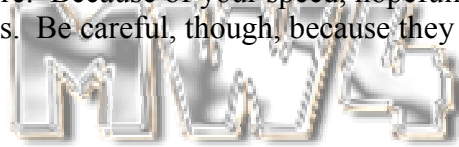
To circle your opponent round and round in a tight radius (usually as tight as your turn rate will allow at full speed) continuously firing.

Perhaps the single most effective play style in the game. The key is to take an agile mech with decent armor, usually a Heavy, although any mech can execute Circle-of-Death. The mech needs to have good speed, Turn Rate, and Torso Twist. They all combine to enable you to hit the enemy while keeping the less mobile opponent from hitting you. I've seen a heavy take down an Assault multiple times because the Assault cannot target the circling mech because of poor Turn Rate and Torso Twist. The average assault only has a Turn Rate of around 44 degrees and a Torso Twist of 80 degrees. That is a very narrow window at which to try and hit you. Most of the time in your turn you can't be hit at all, but, at the same time, you are able to hit from every side. If you work it, you can actually Decelerate and Accelerate your mech to stay out of the line of fire. Circle-of-Death allows you to get around behind the mech where the Rear Armor is weak (often a pilot will completely remove rear armor thinking it is not needing as they will always be facing their opponent.) Also, did you know that damage to that section between the legs goes against the Center Torso? So, you can hit the CT from the front and back. I usually take off whichever arm is on the side of the mech that is trying to turn to catch up with me. That way, they can't Look Left or Right to shoot at me with weapons in that arm. If the mech that spawns has a particularly nasty alpha, remember that and go for the legs next time. Legs are easy targets for Circle-of-Death cause you hit them from front, back and the sides. Circle-of-Death works great in the enemy dropzone. Recall, that you can always know the location of the other team...eventually. Wait in their spawn until your team kills one of the opponent and then, wham, you hit them with Circle-of-Death as they spawn. A Heavy has enough armor to last a couple of 1v1 rounds while you strip the armor off their mech and get the kills. I've seen the following scenario happen. The opposing team is way ahead in points and then the game flip-flops because a teammate has gotten into the enemy's spawn and just killed a mech 3 times over sending the points soaring. Should I even mention to be careful! If your team kills more than one mech at a time or another mech is killed while you are engaging one, you could suddenly be facing multiple foes. Still, if you find yourself in that situation, it is still possible for you to make more points than they if you use Circle-of-Death with high DPS weapon loadouts.

**Hit-N-Run**

This is used by fast mechs to quickly take an open shot and then scoot behind cover until weapons have recharged and repeating.

I use this often with a Medium or Light mech against jump-sniping mechs. The key is to go radar dark so you are only detectable within 250m (unless they have BAP). This is important because you don't want to attract the attention of other enemy mechs. Sure, they can type in chat to their team where you are, but they are probably too proud to do that and think they can handle you on their own. I'm often amazed how this tactic can be pulled off on a single mech when there are other mechs only a couple hundred meters away, but in open servers there often so little teamwork that you can take a mech down right under the nose of the enemy. So, the gist of it is, you just crest a hill enough so only your upper body is exposed and fire your alpha-strike and then back down the hill. Then it's dash up the hill, crest, fire, and then back down over and over. You need to have over a hundred kph speed to make this work. If you alter the location at which you crest over the hill the enemy mech will be kept guessing where to look. Jump-snipers have long recycle weapons so you can hit them a couple times before they can return fire. They move slow, you move fast. They will be in the same location, you are coming from what seems like everywhere. Because of your speed, hopefully they will miss and then you have even more passes. Be careful, though, because they have a lot more firepower.



**Jump-sniping**

Here's my take on jump-sniping or sniping in general in the Team Battle format: long-range weapons (800m+) that snipers, with or without jumpjets, like to use, do not have large alpha-strikes, even in bulk. They are heavy if ballistic, and hot if beam-type. They all have long recycle times. Here are commonly used ones with range, damage, and recycle:

Weapon	Range	Damage	Recycle
ER Large Laser	800m	7.5	5
PPC	850m	12	6
ER PPC	925m	15	8
Light PPC	875	8	6
Rail Gun	1000	56	10
MiniGauss	1000	8	6
Light Gauss	1200	12	6
Gauss Rifle	800	18	6
Clan Gauss Rifle	800	18	7

## Styles of Play

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Now, based on those numbers, how much DPS (Damage-per-second) are they doing? Here are some configs I put together, trying to get as much firepower as I could on a Gladiator, 95 ton mech, when firing an alpha-strike (hey, have to wait for jumpjet recharge so might as well fire all weapons at once, right?):

6 MiniGauss @ 48 dmg/6 seconds = 8 DPS x 1.08 Dmg Ratio = *8.64 points/sec*  
4 Light Gauss @ 48 dmg/6 seconds = same as above  
3 Gauss&2 ER Large Lasers @ 69 dmg/6 seconds = 11.5 DPS x 1.08 = *12.42/sec*  
6 ER Large Lasers @ 45 dmg/5 seconds = 9 DPS x 1.08 = *9.72/sec*  
6 ER Large Lasers&Light Gauss @63 dmg/7 seconds = 9 DPS x 1.08 = *9.72/sec*

Oh, and I mentioned, previously, heat management. That might be a problem returning fire with an in-your-face mech that has close range, fast-recycle weapons. Can you say shut-down? Now, let's take a look at a Battlemaster with 6 Clan Ultra AC5's.

Weapon	Range	Damage	Recycle
Clan Ultra AC5	750m	5	1.5

6 Cultr5's @ 30 dmg/1.5 seconds = 20 DPS x 1.08 Dmg Ratio = *21.6 pts/sec*

By the way, that's not all the weapons I would be able to fit on the Battlemaster either because the Cultr5's only weigh 8 tons. Add to that fact that the Battlemaster has a higher Damage Ratio then the Gladiator would make the point spread even greater (*23.4/sec*). As you can tell I like the Battlemaster. To get suggestions on other mechs read the Mech Selection section above.

Let's take another example using the Clan Ultra AC10's.

Weapon	Range	Damage	Recycle
Clan Ultra AC10	500m	18	4

4 Cultr10's @ 72 dmg/4 seconds = 18 DPS x 1.08 Dmg Ratio = *19.44 pts/sec*

Still twice as many points per second then all but 1 of the long-range examples. Snipers that use jumpjets point out that since they have longer range they can score hits earlier and therefore make up points. Really? I don't see them taking advantage of range when they don't see you at all. There are few maps where there isn't enough cover to make your way to an enemy mech that has given itself away by fire. Most likely, they are already engaged or have another mech targeted to pay attention anyway. Even if they see you, fire and tag you, they now have to wait several seconds for their weapons to recycle and by that time you will most likely be in weapons range. At that point, as shown above, you vastly out-gun them. They'll cry, and whine why you don't play the way they do. They'll moan, and sob and bark, "noob-rusher!" Again, I call it Pro-Blitzing, and the

Sniper that just threw a temper tantrum earned a new title – Jacked Up Jumper. By the way, I use incoming trash talk for motivation. I usually don't return it, but it helps me get into the zone or at least focus.

### **CLASSIFIED SCIENTIFIC TESTING**

(in a top-secret research facility located a mile under the harshest desert known to man, accessible only by a shaft whose opening is revealed by a pressure plate in an ordinary-looking cactus).

“There are no atheists in the foxholes.”

- William Thomas Cummings

The next section is various testing I've done mostly in the Mechlab, Instant Action or a non-advertised or locked multiplayer server. This testing in this section covers a period of time, literally, of several years. I have continually added to this file during that time. It is mostly unedited, grammar included, and reflects the learning curve I went through as a pilot. I did group the tests into like categories for continuity. Some of the data will be common knowledge to many experienced pilots, but at the time it was recorded was usually a revelation to me. Most of the file was posted on various forums of units that I have belonged to - I knew the pilots that were reading it. Hence, it has a certain colloquial, familiar conversation rather than the more formal writing up to this point. I relinquish it in its current form both for the nostalgia, and for new or returning pilots, who may find encouragement from its honest simplicity.

### **Testing on Damage Multiplier:**

As we all are aware...the number of points of damage a weapon does in battle (or Team Battle) is the # of points for your score multiplied by your chassis bonus also called the damage multiplier. If your weapon on a Kodiak does 5 pts you will receive 5 points exactly because damage multiplier is 1.0. For an Ares it is  $5 * 1.7$  or 8.5. I tested this and it was found true. The difference in the sizes of the mech didn't change the points awarded (not talking about kills just damage). I always thought that a little mech should shoot only larger mechs for additional points but this is not so. I also knew from what I heard that there is also a significant bonus for smaller mechs killing larger mechs, for instance an Uller killing an Annihilator. To test this, I took several size mechs into a Multiplayer game I hosted (only me with Bots) into Coliseum. The only weapon on the attacking mech I piloted was 1 ultra5 (does 5 pts of damage), and the other mech had no weapons. I kept shooting at one leg until the mech blew up. I noted the score before every shot so that I would know what the last score was before the kill. Then I subtracted the final score (after killing the mech) minus the score before the killing shot. The difference in points comes when actual kills take place. The score awarded should be  $100 *$

chassis bonus. This is found in the lobby of a multiplayer game under Map and then Description. Here is the results for the different mech scenarios:

Ares (60 tons) kills Uller (30 tons) = 315 points

Ares (60 tons) kills Annihilator (100 tons) = 343 points

Uller (30 tons) kills Annihilator (100 tons) = 500 points

Uller (30 tons) kills Ares (60 tons) = 514 points

Annihilator (100 tons) kills Uller (30 tons) = 230 points

Annihilator (100 tons) kills Ares (60 tons) = 245 points

Annihilator (100 tons) kills Annihilator (100 tons) = 370 points

You can take those results and interpret them how ever you'd like. Even if the results aren't exact, it's obvious that the damage multiplier is not the same for damaging mechs as it is for killing them. Does anyone know why it's different?

Another interesting fact is that when I was piloting an Annihilator against another Annihilator I WAS RECEIVING 2X THE POINTS when I was shooting a black spot on the mech versus a non-black spot. Another reason to shoot the damaged black areas on a mech. Not only to kill them easier and faster but to award more points.

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## Damage Multiplier:

I always thought that the chassis bonus was a fixed ratio, for instance, a 30 ton mech would have exactly 3X the damage multiplier as a 90 ton mech..say, an Uller vs. a Blood Asp. However, this is not the case. I came across a table today that shows the damage multiplier for every MW4 mech. As I expected, most are pretty close to the exact ratio according to tonnage, but to my surprise there were some mechs of the exact same tonnage that had different values for the damage multiplier. One of the best differences is the Osiris compared to the other 30 ton mechs (Uller and Urban). The latter two both have the 3.0, but the Osiris has 3.21. In fact, the Osiris's damage multiplier is almost the same as the Mechs with 5 tons less (Brigand, Commando, Solitaire). It's not a big difference, but in a case that all 3 have what you are looking for you should choose the Osiris. I'll give two other examples, one in the Assault and one in the Heavy. The following are the 80 ton mechs with their perspective damage ratios in parenthesis: Awesome (1.2, Canis (1.2), Gargoyle (1.2), Victor (1.17), Zeus (1.32). Obviously the mech with the best damage multiplier is the Zeus (which, I don't have because I don't have the IS Mechpack!). The last example are 65 ton mechs from the Heavy Class: Argus XT (1.37), Catapult (1.44), Cauldron Born (1.3, Loki (1.52). The difference b/w an Argus XT and Loki is .15. Now my math may be wrong but that's 60 extra points per 1000. If your score with an Argus XT was 5000, it would be 5300 with a Loki. With 4 players that would be an extra 1200 pts for the team and for 8 players an extra 2400 points. Again, this information is probably well known to most that visit the site, but to me it was a minor revelation.

-----  
Seems like lots of players out there think in Battle/Team Battle games you get more of a kill bonus the bigger the difference in tonnage between mechs....not true!

I've tested this b4 but before I posted double-checked again by launching a server, putting it on coliseum battle, facing an Annihilator and a Solitaire in my Solitaire. Both gave me 500 kill bonus.

If you pilot a light, you don't have to go up against a heavy or assault to get a "differential" bonus. You can take out a light and get the same amount of points.

This myth seems in-grained in many pilots. To verify try it out!

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Infiltrator - Of all the BA's this has the highest Damage Multiplier - 6. BA's range from having 2 -3 available tons if stripped of everything. Those having 3 tons available have a Damage Multiplier of 4. Those with 2 or 2.5 tons available have Multiplier of 5. The Infiltrator is the only BA that has a 6. However, it has the same kill bonus as the other mechs with 2 tons available - 700.

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### Testing on Armor:

I've heard and wondered about the true effectiveness of Reactive or Reflective armor compared to Ferro Fibrous. I decided to do a test and the results are as follows:

I used a Fafnir, Daishi, Atlas, and Annihilator as the test subjects and my mech was an Ares. The weapon(s) I used were 3 cultr5 totaling 15 points of damage per squeeze of trigger. I targeted the right torso on all 4 mechs in instant action Coliseum. About 90% of the time I hit the right torso but occasionally hit another part of the mech...I tried to disregard those shots. The right torso on all 4 mechs has 72 points of armor. I alternated between Ferro and Reactive. All have Standard Internal armor.

Fafnir (Ferro): Fafnir (Reactive):  
Black Kill Black Kill  
Shots 11 15 15 20

Daishi (Ferro): Daishi (Reactive):  
Black Kill Black Kill  
Shots 9 13 11 13

Atlas (Ferro): Atlas (Reactive):  
Black Kill Black Kill  
Shots 9 13 11 13

Annihilator (Ferro): Annihilator (Reactive):  
Shots 9 15 12 18

I did notice that although I hit the right torso the damage must have spread to other areas because I was doing more than the 72 points of damage that the right torso has. To blacken the right torso of the Daishi, it took



9x15=135 pts. Maybe in the future I will use only lasers. This also reflects how much punishment the internal armor can take. For a kill 13x15=195 pts. More testing is needed but it appears that internal damage can be as much as 60 pts before death.

I have read that Reactive and Reflective give 50% more protection (or 1/2 damage received from) Ballistic/Lasers respectively. Taking the Annihilator for an example...9x15=135 pts to blacken with Ferro Fibrous and 11x15=165 to blacken with Reactive. If the 50% rule were correct it should take 202.5 to blacken but it does not. That's only about 18%. It also appears that certain mechs receive more protection from Reactive armor than others. According to the table above the Fafnir will benefit the most, although still not 50% added protection.

The last thing to mention is the weight of Reactive vs. Ferro Fibrous. For all 4 mechs it costs (weighs) 9.7 extra tons for full Reactive armor. Although the test was not conclusive, the results indicate that Reactive armor may not be worth the price.

I will do the Reflective armor tests tomorrow.

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You may have read the earlier post on open forum talk regarding reactive vs. Ferro...a certain pilot suggested I put posts like that here instead of there so here it is. Using the same control (mechs, damage, right torso, full armor etc.) and using 2 large lasers (15 points per squeeze of trigger) here are the results:

Annihilator (Ferro): Annihilator (Reflective):  
Black Kill Black Kill  
Shots 8 14 12 17

Atlas (Ferro): Atlas (Reflective):  
Black Kill Black Kill  
Shots 8 14 12 17

Reflective is closer to the 50% added protection against lasers it seems than reactive although it could be because of the spreading of the damage of the cultr5.

4)the center torso does not blacken like the right torso. The right torso can be black and still take several more hits before the mech dies. The center torso goes straight from blinking red to killing the mech. Granted, the center torso has more armor but I think less pts needed to kill than to go through right or left torso armor plus internal armor (see previous post).

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I did this test awhile back but keep forgetting to post it. It's not a very accurate test so take what you can from it. I took an Ares which has Standard armor and an Argus which has Endo Steel both at 60 tons. I shot a leg until it turned black and then counted when the mech was destroyed using 1 cultr5 (5 dmg per pull of trigger). It took about 11 shots for the Argus and 6 shots for the Ares. I always thought that Standard was better because it can take more internal damage before blowing up but in this case it was the opposite. I think more testing is needed but it's difficult to do an accurate test since you have to have 2 different mechs.

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Took a Supernova with 6 ER Large Lasers against an Annihilator with little leg armor in Coliseum. My intent was to find out exactly how leg armor (external and internal) works.

I started out with 24 pts of armor and an alpha strike from the Supernova was 45. 1 shot caused the leg to blink red. Second shot black. 3rd shot kill.

Lowered to 12 pts of armor and same results.

Lowered to no armor (just the minimum 3 pts) and same results.

I was surprised to find that even with no armor and a 45 point alpha strike the leg still functions until another shot. I also learned that the uninjured leg takes damage also when the initial legs have no armor left. What I mean is, if a leg takes a shot and causes to lower the pts on the leg to almost nothing, the next shot will cripple the leg and also do damage to the other leg. My first shot caused the armor to go down about 95%. The next shot blackened the leg and also caused the other leg to go down about 70%.

I did a final test with exactly 45 points of armor on each leg (which equaled the alpha strike). I learned that an alpha strike only brought a leg down to half armor and then a second strike lowered it to no armor but leg was still functional, and a 3rd strike crippled but the extra damage went to the other leg again bringing the previously undamaged leg to about 60%. The important lesson to know is that leg armor is actually stronger than one might think. It will always take 2 shots to cripple a leg at minimum and even if the leg armor equals the alpha strike it only takes away half the armor (don't ask me why).

Took a BattleMaster IIC into Coliseum with a Plasma Cannon, 2 Hvy Med Lasers, and a Clan Flamer. To destroy the S1/S2/Gun it took:

MadCat Mk II : 49 points

Canis: 46 points

Behemoth II: 126

Marauder II: 129

Blood Asp: 90

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I'm sure many, if not all, know that you can have a wire outline of the mech you have targeted or a line graph of the mech by pushing the comma key (or the period key for your own mech). I use the wire outline, but sometimes it's useful for the line graph for testing purposes.

Using this method I verified that after destroying certain parts of a mech where the damage is transferred next (besides internal if applicable).

-Once a leg is destroyed, armour (I spell armor armour...sorry habit, it's from Lord of the Rings Online), from the other leg starts going down (as well as internal CT armour).

-The butt area subtracts armour from both CT (mainly) and from RT (Rear Torso).

-On some mechs the rear butt area first subtracts armour from the S1 or S2 region then after destroyed the CT (mainly) and RT (Rear Torso). The front crotch is CT/RT and not S1 or S2.

-After destroying an arm the damage, yes, goes to the left or right torso, but also a little to the center torso armour (and of course internal CT).

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I've been messing around with these specialty armours that provide 50% DR (Damage Reduction) against Ballistic/Beam weapons. One thing I noticed is that not only do they have reduction in actual damage but in points as well. I was under the impression that damage done was halved but a mech still got the normal amount of points of a weapon used against specialty armour \* the Damage Multiplier. This is not the case.

Might be a good way to win a team battle game in a match. Everyone on team determine whether to go Reactive or Reflective depending on map.

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Mechs have natural armor apart from Ferro/Reactive/Reflective and internal (Endo/Standard). A Highlander and MadCat Mk II (both 90 ton mechs, one with Standard and one with Endo Steel) with no armor (only the bar minimum 3 points of armor) took 37 pts of damage before right torso turned black ( $37 - 3 = 34$  natural armor). I assume it is relative to mech tonnage so heavier mechs will have more and lighter will have less. I always wondered why a torso didn't turn black immediately if it only has say 60 pts of armor yet an alpha does say 84 from my Battlemaster IIC. It actually would take 161 points of total damage to kill a mech by shooting the RT with full Ferro armor (66 from Ferro + 34 natural armor + 61 internal Standard).

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Difference between Standard and Endo Steel armor for 2 90 ton mechs (Highlander & Mad Cat Mk II): takes 61 pts of damage from the point at which the Right Torso turns black for the Highlander (Standard) to destruct - damage transfer once black is from RT to CT (also a little Rear Torso). It only took 51 points for the MC MK2 with Endo Steel. This equates to about a +20% internal armor protection when going with Standard over Endo Steel.



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Battlemaster BFG only has about 50 hit points and it is in the S2 slot. It is separate from the Right Arm.

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Ever wonder why BA's seem to be able to take insane amounts of damage for as small as they are and inability to mount a lot of armor? It is because of the inherent armor (armor that exists outside Ferro/Reactive/Reflective/Standard/Endo Steel). It is the armor that often protects against 1 shot kills (such as to the HUD). A Kanazuchi with minimum armor (3 pts of Ferro or 1 tick) still took 11 damage to both a leg and CT before dying. That means there is  $11 - 3 = 8$  pts of inherent armor. It is also very hard to continue to hit a specific upper body section so damage gets spread around easily making it seem like it has a lot more armor than it really has. A Kanazuchi with full CT armor actually can take  $12 + 11 = 23$  pts of damage to center before dying. This is why a BA with armor can actually survive a Long Tom, although usually crit all over. Long Toms spread damage pretty easily and a full armored Kanazuchi can have 72 pts or 2.4 tons of armor. It is rare to have BA's fully armored though because there is very little tonnage left for weapons and certainly not Components.



### Testing on Destroying Weapons and Visual Clues:

The reason for this test was the simple fact...I HATE LOSING WEAPONS! So I took an Annihilator with weapons in all locations against another Annihilator with only 1 Heavy Machine Gun in instant action. I turned the sensors to bars so I could track the damage easier. I chose a Machine gun so the damage would be small and gradual. I started losing weapons with the gauge was about 25%...just slightly below when it started blinking red. I noticed that every time I lost a weapon I was smoking so when you start to see smoke on a mech it may have just lost a weapon(s).

There is a difference between the smoke and fire you see coming from a mech when it is 1 shot away from death. There is dark black smoke vice light black and there are no flames but white hot balls I guess you could describe them with sparks shooting wildly. I tested this only twice but I could tell the difference.

Another very important fact I learned. I took a mech in with NO arm armor. When I got hit I lost the weapon almost right away but the arm still had full armor! What I mean is, the arm acted like it still had full armor before I lost the arm. It continued to provide protection to both torsos even though I only had 3 points of armor allotted to it. This was a revelation to me since I can now take off all armor on an arm if no weapons are on that arm.

Another thing I learned: on the Annihilator the rear armor was being hit by the lower side but not from directly behind. The damage from behind was being spread over CT, RT, LT.

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**Testing on Weapons:**

Took an Ares with an ATM12M against an Annihilator with and w/o LAMS in Coliseum. The following table is # of salvos and the damage done in points:

With LAMS W/O LAMS Difference

1-42 1-45 3  
2-75 2-91 16  
3-110 3-134 24  
4-131 4-177 46  
5-167 5-223 56  
6-210 6-269 59  
7-244 7-313 69  
8-266 8-357 91  
9-312 9-404 92  
10-334 10-446 112

LAMS also helps you from being knocked around and knocked down by missiles.



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Took a Fafnir with 1 Clan LBX5 against an Annihilator (no weapons). Has a range of 700 and damage 7. Took a Fafnir because it has almost exactly 1 damage multiplier (.99 to be exact). Here's the damage:

700m = 3 pts  
500m = 4 pts  
400 = 5 pts  
300 = 5 pts  
200 = 6 pts  
100 = 7 pts

Although not a complete test, for the LBX5, to get full benefits it's only at 100m. I'll probably do tests on the other LBX later on.

-----  
This time used the Clan LBXAC10's, the breakdown:

~0-45m = 14  
45-170 = 13  
170-199 = 12  
200-249 = 11

250-299 = 10  
300-324 = 9  
325-349 = 8  
350-399 = 7  
400-440ish = 6  
441-450 = 5

Tests were a little difficult as it seemed to not always be consistent. This could be due to damaging nearby sections in addition to the targeted one or also could be rounding.

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I know most of us just think of Tag Lasers as pointers such as when Arrow points to a spot on the ground where we are supposed to stand during formation training. In the meclab they say they don't do any damage. Well, they do. Not much at all but if you stick a bunch of em on a light mech and take into account the damage multiplier it can rack up some points. I've got an Uller with 5 of them and total they do about 5 points per second. Not damage but points. Not much, but the real advantage is the distance. Tag Lasers have a range of 1000m. We all know how difficult it is to hit a light mech going 123 from a distance of 1000m. Put these Tag Lasers on a light with excellence torso twist and you can sit back from a distance and roam back and forth and pick up some points (like Ghost Highway).

The disadvantages are they build up heat quick and don't do damage. Heat: with only 2 T.L. you are o.k. but any more than that and you'll want to get lots of heat sinks. With my Uller having 5 Tag Lasers I need 10 heat sinks. Damage: You don't do any. Don't expect to get any kills unless you have about 15-20 of these things. I ran around an Annihilator for about 2 minutes before I destroyed just an ARM!

You will pick up some points though. I'm going to try it soon

I never really used either one of these so I decided to try them out. What they do, how they could be used etc.

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Took a Kanazuchi mainly, but also an Infantry into Coliseum for testing, results:

-I know that Battle Claws work from 10m and in and are highly effective (2 on a Salamander can black a leg on an Assault in just 4 hits or 8 seconds). However, I wanted to make sure that some of the other weapons

work that close in...right up next to the mech. I tested BA SL (support laser recycle 2, damage 2) and BA SRM's (recycle 2, damage 3). Both of these hit leg under reticule with no problem which means in addition to a Battle Claw can take out a leg very quickly.

I also noticed that the closest that you can get to a mech depends on the distance of its furthest section from center. That is confusing so here is an example: an Annihilator has its arm guns protruding from the rest of its mech. I could get no closer than the extension of its arms which, btw is about 4m, so legs still within range of Battle Claw. The crotch area is 6m so still within range. I will test again with a mech that has a much more protrusive weapon such as the Railgun.

I also noticed that when I shot at the crotch area of the Annihilator my BA SL were hitting the center torso but my SRM's were still hitting the legs. Apparently, from that distance, the SRM's travel the closest distance to the target?

-I switched into the Annihilator facing the Kanazuchi and let it get right up next to me. I noticed in 3rd person view I could not even see the BA because my own mech was blocking it. I tried with a Daishi and same thing. Based on this, I would say to pilot a BA right up between its legs so you can remain hidden in the center. I did not try 1st person view.

-SRM's are countered by LAMS.

-SRM's do have a little knock. They also produce the "lock-on" alert in the mech being fired upon.

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The Flare Launcher launches a missile in a straight line (like the rockets) for a distance of up to 1000m. It will stick to just about anything. The flare lights up a small area. In the meclab it says a radius of about 200m. When I shot one at the ground the immediate radius of the light was only about 30m. It burns for 15 seconds. It has lower heat than the Overhead Flare and more than twice as fast and has 5 more rounds. It can be seen from about 470m whether it be nighttime or day.

The Overhead Flare launches a missile that does not fly in a straight line but more like the LongTom. It produces much more light than the Flare Launcher and does not "stick" to objects but rather bounces off things until it lights. In using it on Concourse I was able sometimes to bounce it off a building to get it where I wanted and it would float above the ground gradually getting smaller and falling slightly until it went out. It lasts about 10 seconds. I found out that if you want to shoot it above your



mech, you can shoot it at the ground tilting your torso all the way down and it will ricochet straight up.

There are 2 uses I can think of in using them. They both only cost 1 ton and give you 25 (Overhead) or 30 (Launcher) rounds. The first idea is to let your teammates know where the enemy is. Taking Concourse for example, you could stick a Flare onto a building where you just sighted an enemy. Only your teammates would know what it was for. You could use the Overhead for the same idea. The Flare lasts longer and has a quicker rate of fire but the Overhead can be seen from a greater distance. The second use would be to alert your teammates where you are if you need help. Obviously the Overhead would work much better because it's more easily seen.

I would like to try this using a recon mech in some drop in the future if it's ok with everyone. I could scout ahead locate the enemy and use the flares to give away their positions.

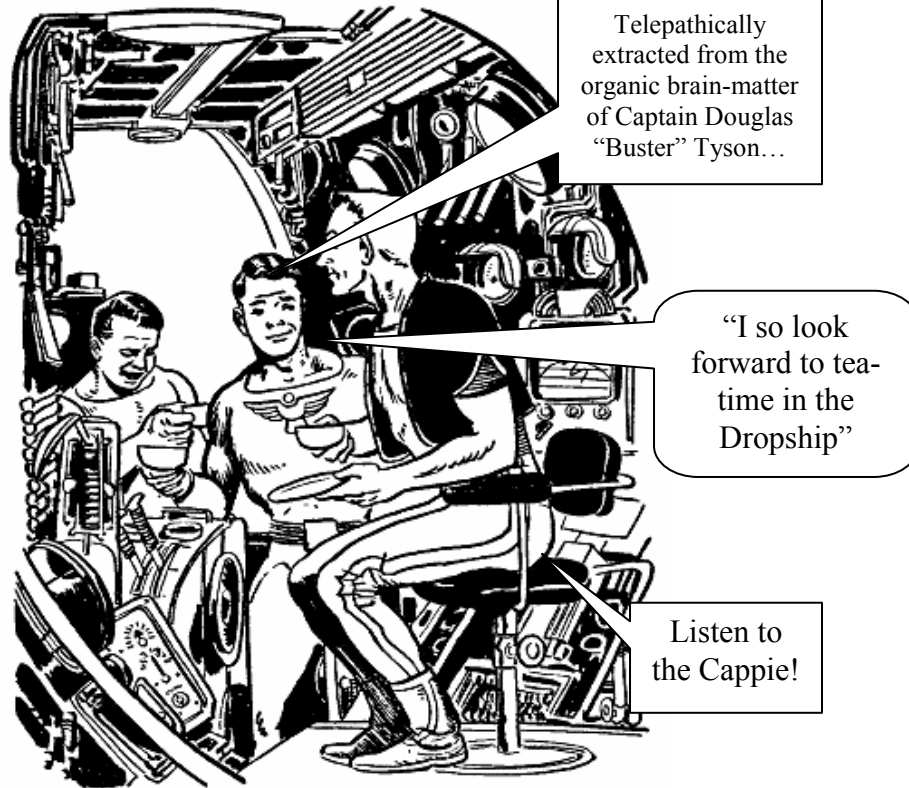


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RAC = Fire for 3 seconds, then watch until the smoke from the weapons disappears, then fire another 3 seconds and keep the rotation...this will prevent your weapons from jamming.

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I don't usually use Lasers, I'm a ballistics guy myself, but I've always wanted to try a mech with large pulse lasers but the heat they produce just doesn't make it feasible. I finally looked into coolant pods to see if I could make it work (using lots of large pulse lasers). On a Sunder I was able to get 3 Large X-Pulse lasers working with constant firing for a long time by chaining 8 small coolant pods. Since the recycle time is 15, that means with 8 there's not much time when a coolant pod isn't firing. In combination with ejecting coolant, I was able to fire for almost a minute without ceasing! 3 Large X-pulse lasers don't do that much damage, but I was able to defeat a Stock Annihilator in instant action Coli. I haven't tested it yet in real combat.



3 things I noticed:



- 1) At about 7100K is when a mech starts smoking...that's about 6 bars from the top
- 2) At about 6700K is when the HUD starts fading and mech starts slowing down...that's about 8 bars from the top
- 3) The large coolant pod says it subtracts 30 heat while the smaller 10. It's roughly 10 times that in K. So when it says it minuses 30 heat it is really subtracting about 3000K.

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Outfitted an Annihilator with all 4 different RACS. Fired all at the same time. The Clan RAC 10 weighing 12 tons and taking up 2 slots was released the quickest from jamming. After all of them jammed, the Clan RAC 10 started firing again nearly 4 seconds sooner than the next nearest one.

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Left out of the Read Me doc is that the Hyper AC2 and Hyper AC5 had changes to heat.

Hyper AC2 down from .6 to .2

Hyper AC5 down from 1 to .3

I checked most of the weapons against older versions in the Mechlab and these are the only ones not documented.

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I created a Longbow variant (nh) with LRM20 Artemis and ER Large Lasers. I noticed that even though they both say they have recycle times of 5, the ER Large Laser actually takes a little longer to recycle. It's maybe 5.2 or 5.3. Just an fyi... not a big deal unless you are expecting the combo as an alpha strike.

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I thought the SRM pack for the BA's were like the SRM's for Mechs and not Strks but they do lock on.

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I've already done the testing on the LBXAC5's that shows even though max range is 700, it only does max damage at 100 or less.

I did a new test today with LBXAC10's. I wanted to determine the "shotgun" effect as I've heard about them. I assumed that they scattered hitting a larger area thereby making it more effective against lights. I guess I thought that because of the scattering effect, you could actually miss hitting the target but some of the "pellets" would still hit the mech meaning you didn't have to be as accurate - hope that description makes sense.

Anyhow, found out that you still have to hit the target normally (no advantage in accuracy), but that damage was spread over several sections despite aiming for a specific section. The specific section did take the most damage by far but even up to 4 additional sections was damaged.

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CSTRK - Although these have a 250m range they fire a salvo with missiles actually launched in succession so it is possible to fire at ~270m while moving toward target and if you are fast enough some of the missiles will still hit.

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UltraAC10's fire a double shot. I knew they were prone to ammo trouble because of this but I never knew for certain that it might be possible to miss with one of the 2 rounds effectively halving your damage. I thought, perhaps, that the double shot was just an animation issue but that both shots actually hit the mech. So, I decided to test it. By taking a Kodiak with an cultac10 and using torso twist I fired when the reticule was on a mech but continue to twist the torso. Using this method it was easy to see that the 2nd shot is about .25 behind the first shot and missed the targeting mech by about 5m or so. I looked at the damage and it was indeed half ( $18/2=9$ ).

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**Testing on Heat Generation:**

I started making a map (I think it will be called TwistedWorld) and saw that you can set a map's Heat Sink Efficiency. So later on below I will put some of the H.S.E. on some of the maps. But first I decided to do a test on the effect of heat sinks on mechs.

Scenario: Annihilator and Ares on Coliseum, Alpine with 2 ER large lasers and 2 ER medium lasers, 1 pull of trigger

Annihilator: no heat sinks  
3800 K, 16 seconds to return to 0 K

- 1 Heat Sink, 3800, 15 seconds
- 2, 3700 K, 13 seconds
- 3, 3700 K, 12 seconds
- 4, 3700 K, 11 seconds
- 5, 3700, 11 seconds
- 6, 3600, 10 seconds
- 7, 3600, 9 seconds
- 8, 3600, 8 seconds
- 9, 3500, 7 seconds
- 10, 3500, 7 seconds

Ares: no heat sinks  
4400 K, 16 seconds to return to 0k

- 1 Heat Sink, 4400, 15 seconds
- 5, 4300 K, 10 seconds
- 10, 4100 K, 7 seconds

Move to Alpine:

Annihilator: no heat sinks  
3800 K, 14 seconds to return to 0

1 Heat Sink, 3700 K, 12 seconds  
5, 3600 K, 7 seconds  
10, 3500 K, 6 seconds

Here is the Heat Sink Efficiency of several maps, the higher the number the faster the mech cools off:

Alpine 1.1  
Big City 1  
Avalon Pro 1.2  
Broken Sky 1.3  
Defiance 1  
FrostBite 1.2  
GatorBait 1  
Ghost Highway .9  
Lakeside 1  
MineHQ 1.5  
PalaceGates 1  
SandDunes Pro .8  
Snowbound 1.2  
Snowjob 1.2  
Wetlands 1



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Took an Annihilator with same config as before (2 ER Large Lasers, 2 ER Medium) with no heat sinks into Jungle, Lakefront, Oilspill. Far away from water, 1 pull of trigger 3800K, 16 seconds to return to 0. Right at water's edge, same result. 1 mech foot in and 1 mech foot out of water, 3600K, only 10 seconds to return to 0. Both feet in ankle deep same result 10 seconds. In water up to thighs same result 10 seconds. No heat difference running or standing still. I could find no deeper water than thigh high. One thing I did notice in Oilspill; when I blew up an Oilrig it did not add any heat even though I was standing next to it. And, the residual flames after blowing up did not add any heat as I walked through them.

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I know I've done several tests with heat. None of them have been completely accurate or comprehensive. So I decided to sit down and figure all this heat stuff out. Also, I wanted to get a grasp on the Relative Heat Efficiency that showed up in the later patches.

So, I took several mechs into Coliseum with 6 ER Small Lasers and no heat sinks:

Archer

Heat capacity 49.3

Heat Efficiency 53

Rel Heat Efficiency 64

Crab

38.7

53

83

Supernova

61

53

52

Tenchi

44.7

53

72



Sunder

57

53

55

Ares

50

53

63

Wolfhound

30.7

53

100

All of them had a 53 Heat Efficiency. They all took 6 seconds to cool to 0K. The only difference was how hot they got.

Archer=1500K, Crab 1900, Supernova 1200, Tenchi 1600, Sunder 1200, Ares 1400, Wolfhound 2400.

The greater the Heat Capacity (found under Chassis in the Mechlab) the cooler the mech heated up to. Not the faster it cooled. Remember they all took 6 seconds to get to zero. The mech with the greatest Heat Capacity of the test group was the Supernova at 61. It heated to only 1200. The lowest Heat Capacity mech tested was the Wolfhound at 30.7. It heated to double that at 2400. This makes sense because the heat capacity of the Supernova is twice that of the Wolfhound and therefore the Wolfhound got twice as hot.

Think of it this way. The higher the Heat Capacity the more heat the mech can take before slowing down or shutting down.

Think of a car gas tank. In a small car the tank is much smaller and it doesn't take much gas to fill it. A larger car has a bigger tank. If you fill both tanks with the same amount of gas, your gas gauge will show 2 different readings. For the small car it may indicate full but for the larger car it might only be half. It's the same with the heat indicator in the game. If you add heat sinks to a mech that has a low Heat Capacity (small tank) you will greatly increase Relative Heat Efficiency much faster than a high Heat Capacity mech. Again, think of a gas tank. If you add gas to a small tank the gauge fills quickly but if you add gas to a large tank, the gauge fills slowly.

I added 3 heat sinks to the Crab and to the Supernova. For each heat sink added to the Crab, the Relative Heat Efficiency went up by 8 points while the Supernova only went up 5 points. I put 10 heat sinks on the Supernova and the temperature went up to 900 from 1200 with no heat sinks. I put 10 heat sinks on the Crab and the heat reached 1400 from 1900 with no heat sinks. The Supernova only decreased 300K while the Crab decreased 500K with the same number of heat sinks. I put 10 Heat Sinks on the Wolfhound and it reached a temp of 1800 when before with no heat sinks it was 2200. A decrease of 600.

Supernova=0 heat sinks, 1200K  
10 heat sinks, 900K  
decrease -300

Crab=0 heat sinks, 1900K  
10 heat sinks, 1400K  
decrease -500

Wolfhound=0 heat sinks, 2400K  
10 heat sinks, 1800K  
decrease -600

It will take more heat sinks to make a difference with a mech with High Heat Capacity. For a mech with a low Heat Capacity, every heat sink will be more effective than a mech with high Heat Capacity.

Here's another way to think of it. A large house takes longer to heat up with the windows closed than a room. However, it takes more air vents to keep it cool. But, a room only takes a few vents to keep it cool.

To sum up:

There are 3 statistics you should look at regarding heat for your mech.

1) Obviously, the most important is the Heat Efficiency. The higher the number, the HARDER it will be for your mech to slow down or shut down due to overheating.

2) Heat Capacity=the higher the number, the LONGER it will take to reach shut down.

3) Relative Heat Capacity=the higher the number the more effective your heat sinks will be.

The best mechs, in terms of heat, are the mechs with high Heat Efficiency and high Heat Capacity. If you can't have that, then go with a mech with a high Relative Heat Capacity and add heat sinks.

-----  
-Infantry

My only test with an infantry was to determine the heat produced by running. Anything over 15 kph started to increase heat at 1 tick every 3 seconds or so. An increase of speed even to max of 32 did not increase this heat generation. At speeds 15 or below the mech lost heat rapidly.

-----  
Infantry generate heat while running moderate or max speed. I've already run a test to determine the kph at which the Infantry will cool. However, I never thought about adding a single heat sink.

Adding just a single heat sink to an Infantry prevented all heat generation from running full speed even on Sand Dunes.

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Shutting down a mech does not help it cool. Took a BK with 2 ERPPC's on Factory (H.E. of 1). Topped out at 5800k and took 17 seconds regardless to cool back to 0k.

However, going 93kph it took 25 seconds to cool down, so moving does produce heat, or at least lowers cooling. After further testing it appears that between 51% - 100% of max speed the mech takes longer to cool while 0% (standing still) to ~50% takes normal time to cool.

-----

What effect does flushing coolant once shutdown actually do? Took a Warthog with no heat sinks and overheated to point of shutdown. I was shutdown for 10 seconds and when I came back up temp gauge was at 7300k (well into orange). If I flushed coolant to empty once I shut down, I came back up in ~6 seconds and only 3700k on temp gauge.

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**Testing on Suicide:**

Took an Annihilator vs. Annihilator in Coli on Battle and ran against it at 73...it was stationary.



I got 3 pts  
It got 3 pts

Took an Anni vs. Ares ran at 73 it was stationary

I got 3 pts  
It got 2 pts

Took an Anni vs. Uller ran at 73 it was stationary

I got 3 pts  
It got 2 pts

Took an Ares vs. Anni ran at 73 it was stationary

I got 2 pts  
It got 5 pts

Took an Uller vs. Anni ran at 111 (slowest) it was stationary

I got 3 pts  
It got 5 pts

Looks like if your a smaller mech running into a bigger mech your helping the other team by giving them more points than you are receiving. Of course, if you don't have any weapons....

Suicides and Ramming from BA's does do damage to BA's. Not much...it took 7 Suicides from a Golem to destroy an Elemental.

-----  
With the prevalence of suiciding these days I decided to go ahead and do these tests. Here's some things I learned:

1) You must be within 25-27m to do damage to another mech. At around 25m you don't damage the whole mech, just the side of the mech facing the suiciding mech. However, right up next to the mech (touching) damage is done all over the mech despite location of suiciding mech. The damage dealt is a % for each section with each section having a different %. With a Kodiak having 30 pts of armour throughout, the damage done by another Kodiak touching when suiciding does around:



LT/RT - 14 pts  
CT - 12 pts  
Arms - 6 pts  
legs - 7 pts  
rear - 5 pts  
= 44 to 48 pts

HUD - 0 pts. The HUD is not damaged in suicides.

2) Suicides take 3 seconds from the time you hit the keystrokes to the actual blowing up of the mech regardless of the chassis.

3) Damage multiplier does work in damage of suicide. So, if you are able to kill a mech while suiciding you get the kill bonus plus damage. I was able to suicide using an Uller at 30 tons with a kill bonus of 500 (same as suicide penalty) and I was actually able to make about 100 pts in the positive (~600 total points for the kill and damage minus the 500 suicide penalty).

4) Tonnage does affect the damage done on a suicide. It's maybe an extra 1% per ton? That's a guesstimate.

85 -100 tons took 3 suicides to kill the Kodiak with 30 pts per mech part.  
Tonnage Suicides (to kill the opponent mech)

75 4

65 4

55 5

45 6

35 8

I suppose that, based on the above data, that suiciding can actually be beneficial. However, the main point against suiciding is not one of positive or negative points for team. It's one of sportsmanship. Let's face it, when someone suicides on someone it is to prevent the other person from getting a kill. Imagine if a person you dislike on the battlefield kills you and then you meet again and the enemy is crit but suicides...robbed ya of any chance for retribution. Suppose this happens 3 or 4 times in a game...can get really discouraging. It becomes ten times as annoying when you are piloting a Battle Armour and the enemy continuously suicides on you rather than let you get the kill. That essentially makes BA's useless.



**Testing on Components [Electronics]:**

Went to Coli and tried every jumpjet mech. Put torso all the way down so looking at ground and looked at the meter height. The bigger mechs obviously were taller. Then used jumpjets straight until ran out from standstill. Continued to look down at ground and recording height. Then subtracted height of mech from distance above ground to reach jumpjet height. Here are the results:

Ares=55m  
Avatar=45  
Black Hawk=57  
Black Knight=70  
Brigand=44  
Canis=71  
Catapult=65  
Chimera=50  
Commando=54  
Cougar=46  
Gladiator=70  
Grim Reaper=61  
Grizzly=53  
Hellspawn=46  
Mad Kat MKII=73  
Osiris=48  
Ryoken=56  
Shadow Cat=49  
Templar=70  
Thanatos=72  
Thor=57  
Urban Mech Clan=71  
Urban Mech IS=80  
Uziel=75  
Victor=76



Highest jumping mech = Urban Mech IS  
Lowest jumping mech=Brigand

Highest Assault = Victor  
Lowest Assault = Gladiator/Templar

Highest Heavy = Thanatos  
Lowest Heavy= Avatar

Highest Medium = Grim Reaper  
Lowest Medium = Hellspawn

Highest Light = Urban Mech IS  
Lowest Light = Brigand

-----

This test is also on Coliseum. We all had Cyclops with ECM and BAPS (we tried a couple of other configs too.) I originally wanted to do the test to see if a mech was undetectable with ECM less than 250m if they had their radar off. Here is what we found out:

They had ECM/I had normal radar = I detected them at 500m (1/2 normal range)

They had ECM/I had BAPS = 600m (1/2 normal range)

They had ECM/I had passive radar = 90m

Now here's the kicker...

They had ECM WITH PASSIVE RADAR/I had normal radar = 500m

So, ECM is only valuable if the enemy has their radar off. You can sneak in up to a distance of about 90m without them detecting you. However, if they have normal radar and you turn passive, they will be able to detect you up to 500m which is double normal. Another way to remember this is the enemy will be able to detect you within 500m whether your radar is active or passive if they have normal radar. In other words, if you think you will be able to sneak into the enemy camp with radar passive (dark) you should think your Strategy again. They know you are coming at 500m.

-----

Hi all, IFF only works if the distance is over 200m. Within 200m the crosshairs still turn red.

-----

The test regards the damage done by missiles that have lock on vs. no lock on. Took a Longbow with 1 Clrm20. Fired with lock on and without at close range. Both did around 20 pts of damage. Of course, without lock-on if some of your missiles don't hit the target you will receive less pts.

Also, checked out lock on time and lock on hold (how long you still have lock on when crosshairs are not on target). Took a Loki in Coli with no

BAP/ECM, with BAP only, with ECM only and with both BAP/ECM.  
Here are the results:

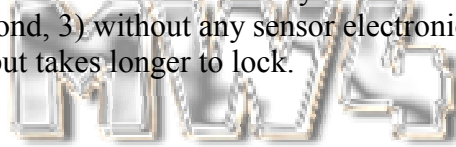
With no sensor electronics:  
1.5 seconds to lock  
3.5 seconds hold time

With BAP & ECM:  
1 second to lock  
2.5 seconds hold time

With BAP only:  
1 second to lock  
2.5 seconds hold time

With ECM only:  
1.5 seconds to lock  
3.5 seconds hold time

So, from the results you can see that 1) ECM has no little if no effect on missiles, 2) BAP decreases lock on time by .5 seconds but also decreases hold time by 1 second, 3) without any sensor electronics you have a greater hold time but takes longer to lock.



-----  
With BAPS Artemis missiles have a lock time of 1 second. Lock last for 2 seconds. Without BAPS lock on time is 1.5 seconds. Lock lasts for 3 seconds.

-----  
I did testing on this in Coliseum Team Battle with a Black Knight (with ECM) and a Reaver/Grim Reaper with no electronics.

The Black Knight went Passive Radar (has ECM though) and the other player approached. The Black Knight could only see the other mech at the normal 250m that passive provides, however, the other mech **COULD SEE THE BLACK KNIGHT AT 500M.**

Conclusion: Don't go passive on a mech that has ECM. Only thing I can think of why this is, is because of an electronic signature that is being picked up from the ECM.

Enhanced Optics – Normally Zoom (Num 0 on your keypad) has a Zoom Window of roughly 16% of your entire screen. Enhanced Optics has a Zoom Window around ~65% of your screen and ~4 times larger than normal zoom. Both normal Zoom and Zoom with Enhanced Optics magnify objects ~11x.

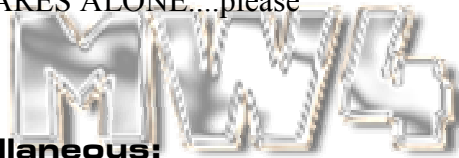
**Testing on Specific Mechs:**

One of my favorite mechs is the Ares. CJ gave me some background on it that a long time ago it used to be indestructible. Then, one of the paks supposedly fixed it. I've been hearing a lot lately about the glitch not being fixed. The one about the center torso. I decided to test it out for myself to see if there was really a glitch about this mech.

Took a Sunder with 2 ER Large Lasers against an Ares full ferro armor into Coliseum. I killed it center torso in about 4 shots. I performed the test twice. Same results. I did notice that it was extremely difficult to target the center torso unless you hit it directly on the nose. Most other shots went to right or left torso. Maybe, that is the reason it seems like a glitch.

So...LEAVE MY ARES ALONE....please

-----



**Testing on Miscellaneous:**

1) The Bot on recruit level actually kept his body turned away from me to protect his damaged side so i usually had to run around it to target the right torso.

-----

2) The Atlas is much harder to hit a right torso than the Annihilator because shots more often hit the center or right arm

-----

Moving backwards: I assumed it was about half of forward speed, but I learned that it varies widely. An Annihilator at 37kph goes 78% of its forward speed in reverse, but a Tenchi going 103kph goes only 36%, and a Dasher going full speed at 163 goes 44% of its forward speed in reverse.

-----

Did you know that you can much sharper while going the same speed in reverse? Took an Annihilator going 29 in both forward and reverse. Had footsteps turned on. The radius was much smaller for reverse.

-----

Acc and Dec help when Torso Twist is low. You can slow down quickly so that your mech turns faster and then accelerate quickly to get out of line of fire.

-----

Large Decals can be seen at a distance of ~280m and clearly ~50m.

-----

Another thing I wanted to point out that you probably already know:

Setting your resolution higher can really make the game look sharp. Until recently I always had my game set at 800x600. I then bumped it up to 1024x768 and then about a week ago I changed to 1280x1024. If your video card can handle it set the game for the highest it can go.



-----

I've always wondered exactly how far end to end is Coliseum. Well, from wall to wall it's 1295m. Which means if you have 1000m range you would need to stand 295m from the wall to hit anything on the other side. If you look at the side walls in Coli you can see miniature arches etched into the wall itself (like the side entrances but not near as deep). If you count to the 7th arch you will be at the 1000m distance.

-----

One last note. I recently played a game against a pilot that I could not target. I'm not talking about lock-on but just the red box around the target in which you can see the damage of the mech. I have a button that allows me to target whatever is under the crosshairs and another button to switch between targets. Neither of them would work against this mech. I know the mech had ECM because I asked the pilot. So I did a test with ECM and it does NOT prevent targeting. So, I don't know why I couldn't target it.

I figured out why I couldn't target it. Depends on range.

-----



To change firing groups while in combat:

- Press the \ key
- A blue box appears around a weapon (probably top weapon in list)
- Press the P key to move the box to the weapon you want to change its grouping
- Press the Shift & 1 or Shift & 2 or Shift & 3 buttons simultaneously depending on what group you want the weapon a part of .



# GLOSSARY

“The whole art of war consists of guessing at what is on the other side of the hill.”  
- Duke of Wellington

1-shot kill – Destroying a mech in a single pull of the trigger. This is very difficult to do because of inherent armor that makes it nearly impossible to do enough damage to destroy a mech in a single shot.

Advanced Gyro – A selectable Mechlab component requiring some Free Tonnage that reduces knock or “jarring” of enemy weapons by 50% and also helps to prevent a mech from being knocked down.

Alpha-Strike – Firing all weapons loaded on a mech at once for maximum damage.

BA – Battle Armor (see Battle Armor)

BAP – A selectable Mechlab component requiring some Free Tonnage that increases sensor range and decreases the lock on time necessary for guided missiles.

Battle Armor – Enhanced armor that accentuates and protects the pilot within and is much smaller than even the smallest mech usually weighing in at around 20 tons.

Brawling – Engaging the enemy at short range.

Chaining - Chaining refers to firing weapons one right after another in a “chain” rather than firing an alpha-strike (all weapons at once), with the intent of continuously knocking an opponent around to prevent return fire.

Circle-of-Death - To circle your opponent round and round in a tight radius (usually as tight as your turn rate will allow at full speed) continuously firing.

Components – Also known as Electronics. Selectable Mechlab additions that increase the functionality of existing systems such as radar, optics, or adds defensive capabilities such as LAMS that can shoot down enemy missiles.

Config – Short for Configuration. A mech that has been refined from its original chassis with additional armor, components, heat sinks, engine upgrades, and weaponry.

Coolant Equation – The computation to determine personal net scoring on a battle/team battle multiplayer game.

Coolant Filter – A method in which to quickly determine whether a particular mech chassis is acceptable to one’s own method of play style.

**Damage Ratio** – Also known as the Damage Multiplier. The ratio of points awarded, to the mech weight. Generally speaking, the lighter the mech, the larger the Damage Ratio. To determine amount of points awarded for damage done, multiply total damage by the Damage Ratio.

**DPS** – Damage Per Second. If you've ever played an MMO you know all about DPS. The amount of points scored per second by weaponry.

**ECM** – A selectable Mechlab component requiring some Free Tonnage that reduces your radar signature in most cases by 50% and also takes longer for enemy missiles to lock on.

**Endo Steel Armor** – Static Internal Armor that is the last line of defense after adjustable external armor has been removed by enemy fire. It comes into play when a section of mech has been turned black. Endo Steel armor provides less protection than Standard Internal Armor.

**Enhanced Optics** – A selectable Mechlab component requiring some Free Tonnage that increases Zoom functionality.

**Ferro Fibrous** – A type of adjustable external armor that can be added or taken from a mech in increments in the Mechlab. It is the lightest of the external armor available but also provides the least protection.

**Free Tonnage** – The amount of available tons to use to upgrade a mech from the bare chassis.

**Gimmick Mech** – A variant that uses weapons, usually non-traditional, in a fashion that requires little skill and that anyone could mimic with nearly equal success.

**Heat Capacity** – The ability of a mech to absorb heat without detrimental effects such as decreased speed, HUD flickering, and eventual shutdown.

**Hit-N-Run** - Quickly taking an open shot and then scooting behind cover until weapons have recharged and repeating, usually performed by light or medium mechs.

**HLA** – Heat, Limited Ammo, a game type.

**IFF Jammer** - A selectable Mechlab component requiring some Free Tonnage that causes the reticule to remain green (friendly) upon targeting an enemy mech. This is only effective at distances of 200m or greater.

**Inherent Armor** – The invisible armor that all mechs have that protects from the 1-shot kill. In combination with external armor it makes it nearly impossible to create an alpha-strike that would do enough damage to get the 1-shot kill.

**Instant Action** – A single-player mode used by the author for testing the mechanics of the core game play.

**Internal Armor** – Fixed armor beneath external adjustable armor that is the last line of defense against destruction.

**Jumpjets** - A selectable Mechlab component requiring some Free Tonnage that enables a mech, Battle Armor, or Infantry to move vertically for a short period of time.

**Jump-Sniping** – A style of play that combines long-range weaponry with the use of jumpjets.

**Kill bonus** – Bonus awarded in points for destroying an enemy mech. Generally speaking, the lighter the mech the more bonus points.

**LAMS** - A selectable Mechlab component requiring some Free Tonnage that has the potential to destroy a number of incoming missiles.

**Legging** – Destroying or attempting to target the legs of a mech in order to cripple a mech or make it an easy target.

**Mechlab** – The location in game that allows you to choose a mech for a multiplayer game and outfit that mech with various selectable options.

**Milking** – The process of exhausting every point available from an enemy mech by targeting different sections and stripping the mech of external armor before destroying the mech.

**NHUA** – No Heat, Unlimited Ammo, a game type.

**Pro-Blitzing** – Rushing an enemy location in order to score points using various styles of play like Circle-of-Death, and Brawling and utilizing fast recycle weapons.

**RAC** – A ballistic weapon that can fire rounds at a very fast pace, but repeated use causes jamming preventing further fire for a time.

**Reactive** – A type of external adjustable armor that provides 50% Ballistic Damage Absorption on top of normal armor protection. Although it provides greater protection, it also weighs more.

**Reflective** - A type of external adjustable armor that provides 50% Beam Damage Absorption on top of normal armor protection. Although it provides greater protection, it also weighs more.

**Spawning** – Appearing or Reappearing at the dropzone location during the initial launch of a multiplayer game or upon mech destruction during a multiplayer game.

Spawn-raping – A tactic whereby an mech or team will situate themselves in a position to overlook an enemy dropzone and wait until a mech appears in order to get the advantage of first strike.

Standard Armor – A type of Internal Armor that provides better protection than Endo Steel.

Suicide – To self-destruct one's own mech.

Torso Twist – The ability of a mech to turn its torso independent of legs, listed in degrees.

Turn Rate – The ability of a mech to turn its legs clockwise or counter-clockwise and measured in degrees.

Twist Speed – The measurement of how quickly a mech can turn its torso when twisting, measured in degrees.

Variant – A deviation from a config based on the same chassis.



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“Veni, vidi, vici.” (I came, I saw, I conquered.)

- Julius Caesar

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“And, I’m this high when in my Loki.”  
(turns to nearby operator and nods),  
“This is nothing compared to the Hauptmann! Raise the platform!”

